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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Bradford Giles Ackerman, et al.

Serial No: 09/844,947

Filing Date: April 27, 2001

Title: METHOD FOR PRODUCING  
TITANIA-DOPED FUSED  
SILICA GLASS

Examiner: John Hoffman

Group Art Unit: 1731

Mail Stop: Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

BRIEF ON APPEAL COVER LETTER

Enclosed is Appellants Brief on Appeal of the Notice of Appeal that was filed on August 31, 2007.

Please charge the necessary fees of \$500.00 for filing the Brief on Appeal to our Deposit Account No. 03-3325. If there are any other fees due in connection with the filing of this Brief on Appeal, for example an extension of time to make this brief timely, please charge the fee(s) to our Deposit Account No. 03-3325.

Respectfully submitted,

Dated: October 31, 2007

By: Walter M. Douglas

**CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8:**

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Date of Deposit

Julie Henshaw  
Julie Henshaw

Walter M. Douglas  
Registration No. 34,510  
607-974-2431  
Corning Incorporated  
Patent Department  
SP-TI-03-01  
Corning, NY 14831

**APPEAL BRIEF  
PATENT  
October 31, 2007**

**Attorney Docket No.: SP01-095**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**Inventor:** Bradford Giles Ackerman, et al.

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Sir:

**BRIEF ON APPEAL**

This Brief supports the appeal to the Board of Patent Appeals and Interferences from the Final Rejection dated March 12, 2007, in the above application listed above, and the Advisory Action mailed August 9, 2007, maintaining all rejections. Appellants mailed, by First Class Mail, a Notice of Appeal on August 31, 2007 in accordance with 37 C.F.R. § 41.31. A Return Postcard bearing the Patent Office stamped date of September 4, 2007 was received. On October 17, 2007 Appellants received a Notice of Abandonment mailed October 11, 2007. On October 18, 2007 Appellants mailed, by Express Mail, a Petition for Revival of the present application on the grounds of a Patent Office error. The Petition included documentation, specifically the Patent Office stamped postcard, indicating that an Appeal was timely filed. As of the date of the

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mailing of this Brief on Appeal appellants have not heard from the Patent Office regarding whether or not the Petition for Revival has been granted.

Accordingly, Appellants believe that the date for timely filing of their Brief on Appeal is October 31, 2007 based on Appellants Notice of Appeal filing date of August 31, 2007. Thus, Appellants submit this Brief is in accordance with 37 C.F.R. § 41.37.

**I. REAL PARTY IN INTEREST**

The real party in interest in this Appeal is Corning Incorporated, assignee of the entire interest in this application by virtue of an assignment recorded 08/21/2001 at Reel/Frame 012100/0096.

**II. RELATED APPEALS AND INTERFERENCES**

With respect to the appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, there are no such appeals or interferences.

**III. STATUS OF CLAIMS**

Claims 1-2, 4-9, 13, 15, 20, 21, and 23-24 are pending in the application.

**Claims 1-2, 4-9, 13, 15, 20, 21, and 24 are under appeal.**

***Claim 23 is withdrawn from appeal and hereby cancelled.***

Claims 3, 10-12, 12, and 23 were perviously cancelled.

Claims 16-19 were withdrawn from consideration due to a restriction requirement.

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The present application was filed on April 27, 2001 with claims 1-19. An Office Action with a Restriction Requirement was mailed September 15, 2003, and in their Response applicants (now the Appellants) withdrew from consideration claims 16-19 with reservation of right to file a divisional application, cancelled claims 3, 10-12 and 14, and added new claims 20-23. A Final Office Action was mailed February 13, 2004 and applicants replied on April 13, 2004. Applicants received an Advisory Action mailed April 29, 2004 advising that the Final rejection would be maintained and the amendment would not be entered because it raised new issues.

Applicants filed a Request for Continued Examination on May 13, 2004 and received an Office Action mailed May 29, 2004. Applicants replied on September 21, 2004 and received a Final Office Action mailed January 21, 2005. Applicants filed a response on March 11, 2005 and received an Advisory Action mailed March 29, 2005 indicating that the Final Rejection of the claims would be maintained and that the amendments submitted in applicants' Response would not be entered because they raised new issues that would require further consideration and/or search. Applicants filed their First Notice of Appeal on April 11, 2005. On June 3, 2005 applicants timely filed a Brief on Appeal. Between June 3, 2005 and April 12, 2006 the Brief on Appeal was revised four times pursuant to a Notice from the Patent Office and filed the new Brief(s), the last filing being April 12, 2006.

Applicants received an Office Action mailed June 6, 2006 indicating that in view of their Appeal Brief of April 12, 2006, **prosecution was reopened** and new grounds for rejection were given. Applicants replied on October 25, 2006, received a Notice of Non-compliant Amendment mailed December 14, 2006 and replied to the

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Notice on December 21, 2006. Applicants received a Final Rejection mailed March 12, 2007 and replied to the Rejection on May 23, 2007. Applicants received an Advisory Action mailed August 9, 2007. Applicants replied to the Advisory Action by mailing a Notice of Appeal (with a request for an extension of time) with a Return Postcard on August 31, 2007. The Postcard was returned indicating that the Notice of Appeal and other papers were received by the Patent Office on September 4, 2007.

On October 17, 2007 applicants received a Notice of Abandonment mailed October 11, 2007. On October 18 2007 applicants filed a Petition For Revival Of An Unavoidable Abandoned Patent Application, indicating their belief that the abandonment was due to a Patent Office Error. A copy of the Return Postcard bearing the Patent Office stamp was enclosed as proof that the Appeal was time made. At the present time applicants, now Appellants, have not received a reply from the Patent Office regarding their Petition for Revival.

Appellants now submit this Brief on Appeal in order to be timely in with regard to its submission and further in the belief that their Petition for Revival will be granted.

In view of the fact that applicant last amendment of May 23, 2007 was not entered by the Examiner, the claims under appeal are those that were present in the application prior to May 23, 2007.

**A copy of the claims under appeal is attached in the appendix.**

#### **IV. STATUS OF AMENDMENTS**

Appellants Amendment after Final Rejection was filed on May 23, 2007 and **has not been entered.** *Thus, for purposes of this Appeal the Amendment filed May 23,*

*2007 should be considered as not having been made due to the Examiner's rejection of the Amendment and statement that further prosecution would require an additional search. The claims presented herein are those that existed at the time the Final Office Action was issued*

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

Claim 1 is the only independent claims. Claims 2, 4-9, 13, 15, 20, 21, and 23-24 depend on claim 1 either directly or indirectly through another dependent claim. The claimed invention relates to a method for producing a fused silica glass containing titania (a SiO<sub>2</sub>-TiO<sub>2</sub> glass).

Claim 1 is directed to a method for producing a fused silica glass containing titania [page 2, lines 17-18] by synthesizing particles of silica and titania by delivering a mixture of a silica precursor and a titania precursor to a burner [page 2, lines 18-19; page 3, lines 3-5; page 4, lines 4-14; and page 5, lines 1-3]; growing a column of a porous preform [page 3, lines 19-21 and page 5, lines 1-13 and **particularly lines 5-6** in combination with Figures 1 and 2, numeral 40 showing the column growing] by successively depositing the particles on a deposition surface [page 2, lines 19-21; page 3, lines 5-6; and page 4, lines 15-24; (a *deposition surface is also called a "bait" by those skilled in the art*)] at a temperature below the minimum temperature at which the particles can consolidate into a glass [page 3, lines 8-10 and original claim 3] while successively translating the deposition surface away from the burner [page 3, lines 19-22; page 3, line 19; page 4, lines 19-24; and page 5, lines 6-8]; and subsequently

consolidating the porous preform into dense glass [page 2, line 21-22; page 3, lines 5-6; and page 5, lines 14-19].

Claim 2 depends on and further limits claim 1. Claim 2 states that the translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface {a.k.a. “bait”} and the burner during deposition [page 4, lines 21-26 for all].

Claim 4 depends on and further limits claim 1. Claim 4 states that the consolidation of the porous preform is carried out at a temperature in the range of 1200 to 1900 °C [page 5, lines 16-19].

Claim 5 depends on and further limits claim 1. Claim 5 states that the porous preform can be dehydrated by exposing the porous preform to a heated, halide-containing atmosphere prior to consolidation [page 3, lines 10-13 and lines 21-22; and page 5 lines 15-26].

Claim 6 depends on and further limits claim 5. Claim 6 states that the halide-containing atmosphere comprises chlorine [page 5, lines 14-24].

Claim 7 depends on and further limits claim 5. Claim 6 states that the halide-containing atmosphere comprises fluorine [page 5, line. 24-26].

Claim 8 depends on and further limits claim 5. Claim 8 states that the temperature of the heated, halide-containing atmosphere is in the range of from 900 to 1100 °C [page 5, lines 21-22].

Claim 9 depends on and further limits claim 1. Claim 9 states that the glass contains 2 to 12% by weight titania [page 5, lines 27-28].

Claim 13 depends on and further limits claim 5. Claim 13 states that the translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface {a.k.a. "bait"} and the burner during deposition [page 4, lines 21-26 for all].

Claim 15 depends on and further limits claim 5. Claim 15 states that the consolidation of the porous preform is carried out at a temperature in the range of 1200 to 1900 °C [page 5, lines 16-19].

Claim 20 depends on and further limits claim 1. Claim 20 states that the minimum [consolidation] temperature is 1200 °C [page 5, lines 16-18 which indicates that the minimum temperature for consolidation is 1200 °C].

Claim 21 depends on and further limits claim 20 [page 3, lines 8-10 in combination with page 1, line 28, to page 2 line 2, which indicate that conventional boule consolidation temperatures are 1200 to 1900 °C].

Claim 23 is withdrawn from appeal and cancelled.

Claim 24 depends on and further limits claim 1. Claim 24 states that the deposition surface is rotated relative to the burner which successively depositing the particles on the deposition surface [page 2, lines 21; page 3, line 19; and 4, lines 19-23]



**VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

**A. Claims 1-2, 4-9, 13, 15, 20, 21, and [23]-24 stand rejected under 35 U.S.C. §112, first paragraph.**

The Examiner has stated that claims 1-2, 4-9, 13, 15, 20, 21, and [23]-24 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. That is, the claims contain subject matter which was not described in the specification in such a way as to reasonable convey to one skilled in relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The Examiner states:

**1<sup>st</sup> s Statement (Final Office Action, page 2, lines 8-12)**

“Examiner could find no support for the claimed “column of solid porous perform”, or “solid porous”, “successively translating”, “a deposition surface at a temperature below the minimum temperature at which the particles can consolidate” - either explicit or implicit. This is deemed to be a *prima facie* showing of failure to comply with the requirement.” [Office Action of 03/12/07, page 2, approximately lines 13-18.]

The Examiner further states:

**2<sup>nd</sup> Statement**

“Moreover, it is clear that at least the temperature limitation and “while successively translating” cannot be implicitly supported - because they are impossible. The terms “while” and “successively” are two mutually exclusive conditions: ‘while’ means simultaneously, and “successively” means following each other. Nor can a translation be successive with itself - at best it would have to be successive with some other translation. But there is no support for two successive translations (that the Examiner can find) - Applicant cannot now claim two successive translations when the specification does not provide support therefor. As to the temperature limitation, the particles could not stick to the support or to each other if the temperature is as low as claimed. In other words, Applicant is correct in arguing that Blackwell does not meet the temperature limitation - but for the same reason. Applicants’ invention does not provide support therefor.” [Office Action of 03/12/07, page 2, approximately line 19 to page 3, line 7.]

The Examiner additionally states:

**3<sup>rd</sup> Statement**

“Either something is solid or it is porous, it cannot be “solid porous - or if it could possibly be, there would have to be support for such in the specification. The only mention of “solid” in the specification that the Examiner could find is in reference to dense, solid glass.” [Office Action of 03/12/07, page 3, lines 8-11.]

The Examiner further states:

**4<sup>th</sup> Statement**

“There is no support for claims 20-21. Applicant does not dispute this, thus it is deemed that applicant acquiesces on this point.”

- B. Claims 1-2, 4-9, 13, 15, 20, 21, and 23-24 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.**

The Examiner states:

**5<sup>th</sup> Statement**

In his fifth statement the Examiner stated that “Applicants have not disputed this rejection, thus it is deemed that applicant

acquiesces that the claims fail to particularly point out and distinctly claim the subject matter.”

**6<sup>th</sup> Statement**

“Claim 1: it is not understood that is meant by “column of solid porous preform” - is unclear if it means “column of solid glass or a porous preform”, or “a porous column of solid preforms” or something else. As alluded to above, the term “solid porous” is indefinite as to its meaning. And, it is unclear what is meant by “while successively” - since these two words connote mutually exclusive conditions (see above).”

**7<sup>th</sup> Statement**

“Claim 5: it is unclear if the ‘consolidation’ refers to the consolidating step or claim 1, or if it is open to any consolidation.”

**8<sup>th</sup> Statement**

“Claim 21: There is noted that there is no antecedent basis for “the temperature at which the particles are deposited” = it is unclear if the claim is directed to the actual deposition temperature, or if it is directed to the temperature of the deposition surface.”

**C. Art Rejections: 35 U.S.C. § 102 or 103**

**NONE**

**VII. ARGUMENTS**

*For the convenience Board of Patent Appeals and Interferences (the “Board”) convenience, a copy of the (1) Final Office of March 12, 2007, Appellants’ Response of May 23, 200, and Appellants Response of December 2, 2006 are attached in the Evidence Appendix. These attachments are necessary for a complete showing that Appellants have fully replied to all rejections and that the Examiner’s statements in the Final Office Action the Appellants did not response to certain items is incorrect.*

**A. 35 U.S.C. §112, first paragraph rejections - Appellants Response.**

In support of the arguments made herein, Appellants’ have included **complete copy** of their Response of May 23, 2007 in the Evidence Appendix.

*In Moba B.V. v. Diamond Automation Inc.*, 66 USPQ2d 1419, 1437 (Fed. Cir. 2003) the Court of Appeals for the Federal Circuit reiterated that a “patent specification must contain an adequate written description. 35 U.S.C. §112, ¶ 1 (1994). The court further stated that “The written description requirement does not require the applicant ‘to describe exactly the subject matter claimed, [instead] the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed’” *Id* at 1439 (brackets in the text, citation omitted in text). The court went on to say, in reference to Enzo [*Enzo Biochem, Inc v. GenProbe, Inc*, 63 USPQ2d 1609 (Fed. Cir. 2002)] and and Amgen [*Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 65 USPQ2d 1385, 1387 (Fed. Cir. 2003)], that “the record showed that the specification

that taught one of skill in the art to make and use the invention also convinced the artisan that the inventor possessed the invention.” In the present case, Appellants’ specification, read together with the figures, teaches one of skill in the art the claimed method of aking titania-doped silica glass as will be shown by citations below to the specification and figures.

The court further stated thatThe court further stated that “the patent specification must disclose information sufficient to enable those skilled in the art to make and use the claimed invention. Id at 1439. In addition the court

**Examiner’s 1<sup>st</sup> Statement**

Appellants submit that the Examiner is mistaken in his conclusions and that all the terms in the Examiner’s 1<sup>st</sup> Statement are supported by the specification and would be understood by one skilled in the art. Further, Appellants assert that it is well understood that the claims must be read in light of the specification and the figures that may accompany it. In the present case the specification is accompanied by two (2) drawings.

Claim 1 states that the a column of a solid porous preform is grown by successively depositing the particles on a deposition surface at a temperature below a minimum temperature at which the particles can consolidate either partially or fully into dense glass while successively translating the deposition surface away from the burner.

Appellants now refer to the specification on page 4, lines 15-24, and Figures 1 and 2 which describe and illustrate the formation of the solid porous preform 40 by the

deposition of the soot from burners 28 on the deposition surface (“bait”) 34 which is attached by a pin 35 to a spindle 36 that can be ascended (i.e., “translated”) upward [see the arrow on the spindle in the Figures] by means of the motor drive 38. The specification on page 5, lines 5-6 states: “The soot is deposited on the lower end of bait 34 to form a columnar porous preform.”

One skilled in the art, after reading the foregoing sections of the specification and viewing the Figures would clearly understand that using the process steps as described one:

- can continuously grow the preform 40, and
- that the preform is a porous solid as stated by applicants,
- that the preform is in the form of a column (columnar), and
- that the columnar solid porous preform is formed as a result of the upward translation of the bait during the deposition of the soot.

One skilled in the art would also understand that the solid columnar preform is **also porous** because the chlorine treatment step described on page 5, lines 14-16 requires that the preform be porous in order for the chlorine to penetrate the preform to form and remove volatile metal chlorides and also to remove OH from the glass structure.

Regarding the temperature at which the deposition is carried out, Claim 1 states the particles are deposited on a deposition surface (e.g., the “bait”) at a temperature below a minimum temperature at which the particles can consolidate either partially or fully into dense glass while successively translating the deposition surface away from the burner.

The Detailed Discussion (page 5, lines 16-19) indicates that consolidation temperatures are typically in the range of 1200-1900 °C, with a preferred range being 1300-1700 °C. The specification indicates on page 3, lines 8-10, states that *consolidating the glass in a separate step eliminates the need to capture the soot at consolidation temperatures and permits the soot to be captured at a lower temperature*, typically 200-500 °C lower, than possible with the conventional boule process [a process in which the soot is captured at consolidation temperatures; *see page 5, lines 16-19 for preform consolidation temperatures*]. Using the foregoing information, one skilled in the art would understand that applying the “200-500 °C lower temperatures” to the 1200-1900 °C range results in a “minimum temperature of 1000 °C and applying the 200-500 °C lower temperatures to the preferred 1300-1700 °C range results in a minimum temperature of 1100 °C. Further, one skilled in the art reading the “chlorine treatment” temperature range of 900 - 1100 °C would further understand that the “minimum temperature” can correspond to this range because chlorine purification requires that the gas penetrate the preform and that this is done prior to consolidation.

Consequently, Appellants submit that the specification is fully supports the terms the Examiner complained of in his 1<sup>st</sup> Statement and that the specification fully supports these terms as used in claim 1 and claims 2, 4-9, 13, 15, 20, 21, and 24.



**Examiner's 2<sup>nd</sup> statement**

The Examiner states the at least the “temperature limitation” and “while successively translating” cannot be implicitly supported - because they are impossible.

**First**, regarding the temperature limitation, In their comments above concerning the Examiner's 1<sup>st</sup> Statement, Appellants, *citing page and line*, have shown that the temperature limitation (that is, the “minimum temperature”) is fully supported by the specification and have also shown how one skilled in the art would understand and be able to practice the invention. Those comments, given above, are:

“The background art (page 2, line 1) and the Detailed Discussion (page 5, lines 16-19) both indicate that consolidation temperatures are typically in the range of 1200-1900 °C, with a preferred range being 1300-1700 °C. The specification indicates on page 3, lines 8-10, states that *consolidating the glass in a separate step eliminates the need to capture the soot at consolidation temperatures and permits the soot to be captured at a lower temperature*, typically 200-500 °C lower, than possible with the conventional boule process [a process in which the soot is captured at consolidation temperatures; *see page 5, lines 16-19 for preform consolidation temperatures*]. Using the foregoing information, one skilled in the art would understand that applying the “200-500 °C lower temperatures” to the 1200-1900 °C range results in a “minimum temperature of 1000 °C and applying the 200-500 °C lower temperatures to the preferred

1300-1700 °C range results in a minimum temperature of 1100 °C. Further, one skilled in the art reading the “chlorine treatment” temperature range of 900 - 1100 °C would further understand that the “minimum temperature” can correspond to this range because chlorine purification requires that the gas penetrate the preform and that this is done prior to consolidation.”

**Second**, regarding the phrase “while successively translating,” this rejection is incorrect because the phrase was taken out of context by the Examiner. The only translation described is the specification is the upward translation of the bait and the “growing columnar solid porous preform” as it is grown on the bait {page 4, lines 15-24, and particularly lines 23-24}.

The relevant part of claim 1 reads as follows:

“ . . . growing a column of solid porous preform by successively depositing the particles on a deposition surface at a temperature below a minimum temperature at which the particles can consolidate into dense glass

while successively translating the deposition surface away from the burner . . . “

Properly read the above clauses indicate that two events are occurring. The first event is that the soot particles are being deposited on the deposition surface (the “bait”) to make the preform. The second event is that as the preform is being made the bait is

being moved away from the burner. It is a result of these two events is that one forms the columnar solid porous preform. The specification at page 4, lines 25-26 clearly indicates that the “Burner placement is fixed and the bait speed is adjusted to maintain constant burner-to-preform distance during deposition” [of the soot]. The specification on page 4, lines 23-24 also indicate that the “speed at which the bait ascends is critical to the temperature profile and shape of the porous preform 40 formed on the bait 34.”

Appellants submit that the foregoing sections of the specification, viewed also in the light of the Figures, clearly indicate that the solid porous columnar preform is formed in a continuous manner while the bait [on which the preform is being made] is being slowly translated upward.

**Third**, the Examiner has also made comments concerning “two successive translations”. There is only a single translation described in the process. The Examiner’s comments can only be due a mistake due to an improper reading of the claim.

Appellants submit that the Examiner is mistaken in his assumption in view of what the specification actually recites.

**Fourth**, the Examiner has baldly stated that “. . . the particles could not [emphasis added] stick together if the temperature is as low as claimed.” The Examiner mentions Blackwell (U.S. Patent No 5,152,819) as not meeting Appellants’ temperature limitation for the same reason. However, the fact that Blackwell does not mention what applicants teach and have done is not a reason for rejection; rather it is an inventive step in an inventive method of making a solid porous columnar preform. In this instance the Examiner is portraying himself as ‘one skilled in the art’. There is no support for the

Examiner's statement in Blackwell or any other art the Examiner has cited during prosecution. The fact is that using the method of the invention and the apparatus as illustrated in Figures 1 and 2, the particles to 'stick together' to form a columnar solid porous preform as described.

In contrast to Blackwell et al., Appellants state in claim 1, lines 5-7, that the particles (soot) formed are deposited on “. . . a deposition surface at a temperature below a minimum temperature at which the particles can consolidate either partially or fully into dense glass . . .” Thus, Appellants specifically teach that the preform is formed at a temperature below that at which consolidation of the deposited particles [soot] into a glass can occur. Appellants are not required to supply a theory or hypothesis as to why in their method the soot “sticks together” and forms a solid porous preform.

Therefore, Appellants submit that the Examiner is mistaken in his assumption in view of what the specification actually recites and that this ejection should properly be reversed.

### **Examiner's 3<sup>rd</sup> Statement**

In his 3<sup>rd</sup> Statement the Examiner say that “Either something is solid or it is porous, it cannot be “solid porous - or it could possibly be there have to be support for such in the specification”

Reading the specification in consideration of the figures, Appellants submit that there is full support for their method forming a “solid porous preform.” The specification at page 5, lines 5-6 states that “the soot is deposited on the lower end of

bait 34 to form a columnar porous preform. One skilled in the art, reading the specification in view of the Figures, would clearly understand that the invention describes the formation of a “solid porous article”, in this case the silica-titania soot perform.

The phrase “solid porous” is not contradictory. There are articles which can be described as “solid porous” which are known not only to those within technical fields, but also to the general public. For example, sponges, molecular sieves, diesel filter traps, and activated carbon used to remove hazardous gases and also trap fuel fumes in vehicles and/or at refuelling stations. Appellants submit that the Examiner is in error regarding his statement that something cannot be both porous and solid. His statement contrary to experience.

#### **Examiner’s 4<sup>th</sup> Statement**

The Examiner has stated: “There is no support for claims 20-21. Applicants does not dispute this, thus it is deemed that applicant acquiesces on this point.”

The Examiner is correct, *but only in so far as the rejection of claims 20-21 was not in Appellants’ Response dated October 25, 2006* in response to the Office Action of June 6, 2006. By mistake this rejection was not answered in the October 25, 2006 Response.

**However**, when the 4<sup>th</sup> Statement was made in the Office Action of March 12, 2007, Appellants did reply in their Response of May 23, 2007 on page 8. Appellants there stated:

“The Examiner also states that applicant has acquiesced that there is no support for claims 20 and 21. Applicants traverses. Claims 20 and 21 are as follows.

“20. (previously presented) The method of claim 1, wherein the minimum temperature is approximately 1200°C.

“21. (previously presented) The method of claim 20, wherein the temperature at which the particles are deposited is approximately 200 to 500°C less than the minimum temperature.

“Regarding claim 20, applicants refer the Examiner to the Specification on page 5, lines 16-18, in which applicants indicate that consolidation temperatures are “typically in the range of 1200 to 1900 °C.” The lower temperature is 1200 °C. Those skilled in the art would understand that 1200 °C would be the minimum consolidation temperature. Applicants also refer the Examiner to page 3, lines 5-7 which indicate (1) that performing consolidation in a separate step allow eliminates the need to capture soot at consolidation temperatures and (2) that this allows the soot to be deposited at lower temperatures, typically 200 to 500 °C lower than in conventional boule processes. Applicants submit that the specification supports both claims 20 and 21 and that one skilled in the art would understand this and would understand exactly what these claims mean.”

While the Examiner did not enter the ‘Amendment’ because he deemed that it raised new issues and introduced new matter [into the claims], Appellants did respond to the rejection.

However, since this rejection is currently pending, Appellants submit that the above response properly replies to the rejection of amendments to the claims and Specification. It should be noted that the language inserted into the specification at page 3, line 11, was the following sentence taken from the **original claim 14**.

The inserted sentence was:

“That is, the silica and titania particles are deposited at a temperature below that required to consolidate the porous preform into dense glass.”

Original claim 14 stated:

“The method of claim 10, wherein the silica and titania particles are deposited at a temperature below that required to consolidate the porous preform into dense glass.”

Since this language was originally present in the application, Appellants believe that there is no “new matter” issue and that insertion into the cited paragraph is permissible since the language appear in the specification and claims as-filed.

**B. 35 U.S.C. §112, second paragraph rejections - Appellants' Response**

In *Verve LLC v. Crane Cams Inc.*, 65 USPQ2d 1051 (Fed. Cir. 2002), the Court of Appeals for the Federal Circuit reversed a district court finding that the expression “substantially constant wall thickness” in the claims is not supported by the specification and prosecution history by a substantially clear definition of “substantially”. *Id* at 1053. This is similar to what the Examiner in the present case has indicated to Appellants with regard to “solid porous preform”, “columnar solid porous preform”, “while successively” and other phrases Appellants has used.

In its decision the court overturned the district court, stating:

“We conclude that the court erred in law, in requiring that intrinsic evidence of the specification and prosecution history is the sole source of meaning of words that are used on a technologic context. While reference to intrinsic evidence is primary in interpreting claims, the criterion is the meaning of words as they would be understood by persons in the field of the invention. Patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field.” *Id* at 1053-1054.

In the present case, Appellants' specification, read together with the figures, would clearly be understood by one skilled in the art of the field of the invention. For example, such skilled persons would be familiar with the formation of preforms and know that soot from burners, can form a solid porous structure. Such skilled person reading Appellants' specification together with the figures would know how to practice the claimed method of making titania-doped silica glass.



**Examiner's 5<sup>th</sup> Statement**

In his fifth statement the Examiner stated that “Applicants has not disputed this rejection, thus it deemed that applicant acquiesces that the claims fail to particularly point out and distinctly claim the subject matter.”

The Examiner is correct only in so far specific mention was not made to the §112, second paragraph rejections in the Office Action Response of October 25, 2006, However, in their Response of May 23, 2007, in which Appellants sought to amend claims and the specification, Appellants sought to correct the alleged defect.

Appellants believe that had the amendments of their response of May 23, 2007 been entered, any defects that may have been present would have been corrected. In their May 23, 2007 response on page on page 9, Appellants specifically stated:

“ . . . the rejections given under 35 U.S.C. §112, second paragraph, are moot in view of the amendments to the specification, for clarity, and the arguments given above which are incorporated herein in their entirety.” [Emphasis added].

The specific rejection under §112, second paragraph, are the same as those given under §112, first paragraph and Appellants believed that the same arguments they made in regard to the §112, first paragraph, rejections. Thus, Appellants did present a “good faith” argument, which of course was not entered. The specific §112, second paragraph, rejections were directed to claims 1, 5 and 21 and are dealt with in Appellant’s response below regarding the **Examiner’s 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> Statements.**

**Examiner's 6<sup>th</sup> Statement**

The Examiner's 6<sup>th</sup> Statement states:

“Claim 1: it is not understood that is meant by “column of solid porous preform” - is unclear if it means “column of solid glass or a porous preform”, or “a porous column of solid preforms” or something else. As alluded to above, the term “solid porous” is indefinite as to its meaning. And, it is unclear what is meant by “while successively” - since these two words connote mutually exclusive conditions (see above).”

This rejection is the same as that made in the Examiner's 1<sup>st</sup> and 2<sup>nd</sup> Statement as indicated above, though in combined form in this instance.

Claim 1 states that the a column of a solid porous preform is grown by successively depositing the particles on a deposition surface at a temperature below a minimum temperature at which the particles can consolidate either partially or fully into dense glass while successively translating the deposition surface away from the burner.

**First**, Appellants now refer to the specification on page 4, lines 15-24, and Figures 1 and 2 which describe and illustrate the formation of the solid porous preform 40 by the deposition of the soot from burners 28 on the deposition surface (“bait”) 34 which is attached by a pin 35 to a spindle 36 that can be ascended (i.e., “translated”) upward [see the arrow on the spindle in the Figures] by means of the motor drive 38. The specification on page 5, lines 5-6 states: “The soot is deposited on the lower end of bait 34 to form a columnar porous preform.”

One skilled in the art, after reading the foregoing sections of the specification and viewing the Figures would clearly understand that using the process steps as described one:

- can continuously grow the preform 40, and
- that the preform is a porous solid as stated by applicants,
- that the preform is in the form of a column (columnar), and
- that the columnar solid porous preform is formed as a result of the upward translation of the bait during the deposition of the soot.

One skilled in the art would also understand that the solid columnar preform is **also porous** because the chlorine treatment step described on page 5, lines 14-16 requires that the preform be porous in order for the chlorine to penetrate the preform to form

**Second**, regarding the phrase “while successively” (or “while successively translating”) this rejection is incorrect because it taken out of context. The only translation described in the specification is the upward translation of the bait and the “growing columnar solid porous preform” as it is grown on the bait {page 4, lines 15-24, and particularly lines 23-24}.

The relevant part of claim 1 reads as follows:

“... growing a column of solid porous preform by successively depositing the particles on a deposition surface at a temperature below a minimum temperature at which the particles can consolidate into dense glass

while successively translating the deposition surface away from the burner . . . “

Properly read the above clause indicates that two events are occurring. The first event is that the soot particles are being deposited on the deposition surface (the “bait”) to make the preform. The second event is that as the preform is being made the bait is being moved away from the burner. As the preform on the bait and the bait ascends away from the burners [page 4, lines 23-24 and Figures 1 and 2] the deposition surface becomes the that part of the preform that has been deposited on the bait. *It is a result of these two events is that one forms the columnar solid porous preform.* The specification at page 4, lines 25-26 clearly indicates that the “Burner placement is fixed and the bait speed is adjusted to maintain constant burner-to-preform distance during deposition” [of the soot]. The specification on page 4, lines 23-24 also indicate that the “speed at which the bait ascends is critical to the temperature profile and shape of the porous preform 40 formed on the bait 34.”

Appellants submit that the foregoing sections of the specification, viewed also in the light of the Figures, clearly indicate that the solid porous columnar preform is formed in a continuous manner while the bait [on which the preform is being made] is being slowly translated upward.

#### **Examiner’s 7<sup>th</sup> Statement**

The Examiner’s 7<sup>th</sup> Statement states:

“Claim 5: it is unclear if the ‘consolidation’ refers to the consolidating step of claim 1, or if it is open to any consolidation.”

Claim 5 states:

5. The method of claim 1, further comprising dehydrating the porous preform by exposing the porous preform to a heated, halide-containing atmosphere prior to consolidation.

Claim 5 depends only on claim 1. Claim 1 claims only one consolidation step and the specification indicates that there is only one consolidation step. Consolidation temperatures are given in the specification, for example, in the Detailed Discussion on page 5, lines 16-19, which indicates that consolidation temperatures are typically in the range of 1200-1900 °C, with a preferred range being 1300-1700 °C. Consequently, the specification is clear as to the meaning “consolidation” and that the temperature range for consolidation is 1200-1900 °C, with a preferred range being 1300-1700 °C.

### **8<sup>th</sup> Statement**

The Examiner’s 8<sup>th</sup> Statement states:

“Claim 21: There is noted that there is no antecedent basis for “the temperature at which the particles are deposited” = it is unclear if the claim is directed to the actual deposition temperature, or if it is directed to the temperature of the deposition surface.”

Claim 21 depends on claim 20 and states that the temperature at which the particles are deposited is approximately 200 to 500 °C less than the minimum temperature [required for consolidation].

Claim 20 depends on claim 1 and states that the minimum temperature is 1200 °C.

Claim 1 states that the particles are deposited on a deposition surface below the minimum temperature required to consolidate the particles into a dense glass. One skilled in the art would understand that the phrase “minimum temperature required to consolidate the particles into a dense glass” to mean that below this temperature the particles would not consolidate into a dense glass.

In order to properly understand claim 21, it is necessary to discuss the claims in reverse order. That is, in the order of claim 1, then claim 20 and finally claim 21.

**First**, reading claim 1 in the light of the specification and the drawings, it is clear, to one skilled in the art, that the deposition surface (“bait”) is **initially** located a distance from the burners and that the required distance is one such that the particles being deposited are deposited at a temperature below the consolidation temperature of the preform that is to be formed (page 3, lines 8-10) and ultimately consolidated by heating at a temperature in the range of 1200 to 1900 °C [page 5, lines 16-19]. Since the specification states that consolidation temperatures are in the range of 1200-1900 °C (and preferably within the range of 1300 to 1700 °C), it is clear from the specification that the particles are deposited on the bait at a temperature at below 1200 °C.

Knowing the minimum deposition temperature, one skilled in the art would then know that **initially** the deposition surface (“bait”) temperature would be below the consolidation temperature (or else the particles would consolidate). One skilled in the art would also know and understand (after reading the specification at page 4, lines 15-24, and reviewing Figures 1 and 2) that as the soot is deposited the bait is moved or translated away from the burners. This is done in part to maintain the deposition temperature at below the consolidation temperature in the area where the “newly

formed soot” is being deposited as well as to give the preform shape (columnar in this case). One skilled in the art would be able to determine the appropriate distance between the burners so that the temperature of the bait (or that of the preform at the soot deposition site) is below the minimum consolidations temperature. Common instruments such optical pyrometers could be used to make the temperature measurement.

**Second**, regarding claim 20, Appellants also refer to the Specification on page 5, lines 16-18, which indicates that consolidation temperatures are “typically in the range of 1200 to 1900 °C.” A preferred consolidation temperature range is 1300 to 1700 °C. Using this information, those skilled in the art would understand that 1200 °C would be the minimum consolidation temperature and that as a result the soot particles would be collected to make the preform at a temperature of less than 1200 °C.

**Third**, claim 21 states that the temperature at which the particles are deposited is approximately 200 to 500 °C less than the minimum temperature. Applying this range to the 1200 °C temperature of the 1200 to 1900 °C range, one gets a deposition temperature range of 700 to 1000 °C, which is below the minimum concolidation temperature of 1200 °C. If applied to the 1300 °C temperature of the 1300 to 1700 °C, one gets a deposition temperature range of 800 to 1100 °C, which is alsobelow the minimum concolidation temperature of 1200 °C. Thus, in either case the temperature for deposition is below the minimum temperature required for consolidation.

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### CONCLUSION

In conclusion, Appellants request a reversal of each of the grounds of rejection maintained by the Examiner. Appellants have shown above by citation of page(s) and line(s) of the specification and reference to the Figures that each item complained of by the Examiner is present in the application as-filed.

Please charge the necessary fees of \$500 for filing the Brief on Appeal to our Deposit Account No. 03-3325. If there are any other fees due in connection with the filing of this Brief on Appeal, for example, an extension of time to make this brief timely, please charge the fee(s) to our Deposit Account No. 03-3325.

Respectfully submitted,

Dated: October 31, 2007

By: Walter M. Douglas

Walter M. Douglas  
Registration No. 34,510  
607-974-2431  
Corning Incorporated  
Patent Department  
SP-TI-03-01  
Corning, NY 14831

**CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8:**

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail, No. EM087163937US, in an envelope addressed to Mail Stop Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

10/31/07

Date of Deposit

Julie Henshaw  
Julie Henshaw



**APPENDICES TO BRIEF ON APPEAL**

**VIII. CLAIMS APPENDIX**

The claims on appeal are as follows.

1. **(rejected)** A method for producing a fused silica glass containing titania, comprising:

synthesizing particles of silica and titania by delivering a mixture of silica precursor and a titania precursor to a burner;

growing a column of solid porous preform by successively depositing the particles on a deposition surface at a temperature below a minimum temperature at which the particles can consolidate into dense glass while successively translating the deposition surface away from the burner; and

subsequently consolidating the porous preform into dense glass.

2. **(rejected)** The method of claim 1, wherein a translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface and the burner during deposition.

4. **(rejected)** The method of claim 1, wherein consolidating the porous preform into dense glass comprises heating the porous preform to a temperature in a range from 1200 to 1900°C.

5. **(rejected)** The method of claim 1, further comprising dehydrating the porous preform by exposing the porous preform to a heated, halide-containing atmosphere prior to consolidation.
6. **(rejected)** The method of claim 5, where in the heated, halide-containing atmosphere comprises chlorine.
7. **(rejected)** The method of claim 5, where in the heated, halide-containing atmosphere comprises fluorine.
8. **(rejected)** The method of claim 5, wherein the temperature of the heated, halide-containing atmosphere is in a range from 900 to 1100°C.
9. **(rejected)** The method of claim 1, wherein the glass contains 2 to 12% by weight titania.
13. **(rejected)** The method of claim 5, wherein a translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface and the burner during deposition.

15. **(rejected)** The method of claim 5, wherein consolidating the porous preform into dense glass comprises heating the porous preform to a temperature in a range from 1200 to 1900°C.

20. **(rejected)** The method of claim 1, wherein the minimum temperature is approximately 1200°C.

21. **(rejected)** The method of claim 20, wherein the temperature at which the particles are deposited is approximately 200 to 500°C less than the minimum temperature.

23. **(withdrawn from appeal and cancelled)** ~~The method of claim 1, wherein a variation on coefficient of thermal expansion of the dense glass is in a range from -5 ppb/°C to +5 ppb/°C.~~

24. **(rejected)** The method of claim 1, further comprising rotating the deposition surface relative to the burner while successively depositing the particles on the deposition surface.

**IX. EVIDENCE APPENDIX**

**A. Evidence**

The following are submitted as part of the Evidence Appendix.

1. Final Office Action mailed March 12, 2007, pages 36-43 of this document.
2. Applicants' Response of May 23, 2007, pages 44-52 of this document.
3. Applicants' Response of December 21, 2006, pages 53-60 of this document.

**B. Location of Evidence**

The patent Evidence above in in the Patent Office File Wrapper. It constitutes an office Action sent by the Examine to applicants during prosecution and applicants' Responses to office Actions.

**C. Case law**

1. Moba B.V. v. Diamond Automation Inc., 66 USPQ2d 1429 (Fed. Cir. 2003),  
pages 61-69.
2. Veerve LLV v. Crane Cam Inc., 65 USPQ2d 1051 (Fed. Cir. 2002), pages 70 - 72

Appeal Brief  
October 31, 2007  
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**1. Final Office Action mailed March 12, 2007, pages 36-43 below.**



**UNITED STATES PATENT AND TRADEMARK OFFICE**

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,947	04/27/2001	Bradford G. Ackerman	SP01-095	1336
22928 7590 03/12/2007 CORNING INCORPORATED SP-TI-3-1 CORNING, NY 14831			EXAMINER HOFFMANN, JOHN M.	
JMO			ART UNIT	PAPER NUMBER
			1731	
RECEIVED MAR 12 2007 IP DEPARTMENT				
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
30 DAYS		03/12/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

MAR 12 2007 dm  
Final Rejection 5/12/07  
Notice of Appeal 6/12/07  
6 Month Final Date 9/12/07

Appeal Brief  
October 31, 2007  
Application No. 09/844,947

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/844,947	ACKERMAN ET AL	
	Examiner	Art Unit	
	John Hoffmann	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on 21 December 2006.  
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1, 2, 4-9, 13, 15, 20, 21, 23 and 24 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-2, 4-9, 13, 15, 20-21, 23-24 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

<b>Attachment(s)</b> 1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date _____ 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____
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U.S. Patent and Trademark Office  
PTOL-326 (Rev. 7-05) Office Action Summary Part of Paper No./Mail Date 20061211

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/ DETAILED ACTION

*Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

5 The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 4-9, 13, 15, 20-21, 23-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s)  
10 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

13 Examiner could find no support for the claimed "column of solid porous preform", or "solid porous", "while successively translating", "a deposition surface at a temperature  
15 below a minimum temperature at which the particles can consolidate" – either explicit or implicit. This is deemed to be a prima facie showing on failure to comply with the requirement. The burden is now on Applicant to show the requirement is complied with, or to amend the claims so that they comply.

Moreover, it is clear that at least the temperature limitation and "while  
20 successively translating" cannot be implicitly supported – because they are impossible. The terms "while" and "successively" are two mutually exclusive conditions: 'while' means simultaneously, and "successively" means following each other. Nor can a translating be successive with itself – at best it would have to be successive with some

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Art Unit: 1731

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other translating. But there is NO support for two successive translations (that Examiner can find) – Applicant cannot now claim two successive translations when the specification does not provide support therefor. As to the temperature limitation, the particles could not stick to the support or to each other if the temperature is as low as claimed. In other words, Applicant is correct in arguing that Blackwell does not meet the temperature limitation – but for the same reason, Applicant's invention does not provide support therefor.

Either something is solid or it is porous, it cannot be "solid porous" – or if it could possibly be, there would have to be support for such in the specification. The only mention of "solid" in the specification that Examiner could find is in reference to dense, non-porous glass.

There is no support for claims 20-21. Applicant does not dispute this, thus it deemed that applicant acquiesces on this point.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

15 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 4-9, 13, 15, 20-21, 23-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has not disputed this rejection, thus it deemed that applicant  
20 acquiesces that the claims fail to particularly point out and distinctly claim the subject matter.



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4 Claim 1: It is not understood what is meant by "column of solid porous preform" – is unclear if it means "column of solid glass or a porous preform", or "a porous column of solid preforms" or something else. As alluded to above, the term "solid porous" is indefinite as to its meaning. And, it is unclear what is meant by "while successively" –  
5 since these two words connote mutually exclusive conditions (see above).

Claim 5: It is unclear if the "consolidation" refers to the consolidating step of claim 1, or if it is open to any consolidation.

10 Claim 21: There is noted that there is no antecedent basis for "the temperature at which the particles are deposited" – thus it is unclear if the claim is directed to the actual deposition temperature, or if it is directed to the temperature of the deposition surface.

#### **Response to Arguments**

Applicant's arguments filed 21 December 2006 have been fully considered but they are not persuasive.

Regarding the 112 –first paragraph rejection of "column of solid porous preform", applicant points to specific lines in pages 2-5 of the specification. Whereas these lines do support a limitation of making a "porous column", a "columnar porous preform" or a "porous preform" and then converting it into a "solid preform" or a "solid column", such does not support the newly created limitation of "column of solid porous preform" – as far as examiner can tell. Nor does applicant point out how these lines support this new limitation.

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Applicant goes on to point out that since particles are made of solids, the result is a solid preform. This is an assertion that is prima facie unreasonable. Examiner can find no definition for "solid" that means composed of solids. By applicant's reasoning, one can consider a slurry as being a solid, because it too is comprised of solid particles. Since applicant has not defined or otherwise set forth in the as-filed application that "solid" is to mean anything else but is customary usage, the claim is interpreted using the customary definition.

As pointed out previously, the present specification only uses the term "solid" in reference to dense, non-porous glass. Since applicant does not dispute this finding by the Office.

Regarding the "while successively translating" rejection, applicant refers to page 2, page 4 and the abstract. Applicant points out that particles are deposited while the surface is rotated and translated. The relevance of this is not understood. The claim does not recite merely "while translating", rather the claim requires "while successively translating". Since applicant has failed to point out the basis for the "successively" portion of the claim, applicant has failed to show that 35 USC 112 –first paragraph is complied with.

Regarding the limitation of a "temperature below a minimum temperature at which the particles can consolidate", applicant points to page 3, lines 8-10 and pages 1-2. A review of the cited passages indicates that invention does not require capturing the soot "at consolidation temperatures". This is deemed to be insufficient because this passage only refers to the temperature of the soot – it gives no indication of the

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temperature of the deposition surface. The limitation which is rejected refers to the temperature of the deposition surface, not the soot particles. Whereas in other situations this might appear to be splitting hairs – such is not case when one reviews the entire prosecution history. Most notably, at pages 5-6 of the Appeal Brief of 4/12/2006 applicant argues that the substantially identical process of Blackwell has temperatures at which (partial) consolidation takes place. Thus it is deemed that if Blackwell has consolidation, so do's applicant. The plain meaning of "consolidate" is "to join together into one whole"; Since applicant clearly consolidates the particles, there must be something at a temperature which is not below the minimum temperature which permits consolidation.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Application/Control Number: 09/844,947  
Art Unit: 1731

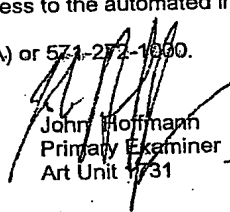
Page 7

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272-1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
John Hoffmann  
Primary Examiner  
Art Unit 1731

3-7-07

jmh

Appeal Brief  
October 31, 2007  
Application No. 09/844,947

## 2. Applicants' Response of May 23, 2007, pages 44-52.

Appl. No.: 09/844,947  
Amdt. Dated: 23 May 2007  
Reply to Office Action of: March 12, 2007

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/844,947  
Applicant : Bradford G. Ackerman  
Filed : April 27, 2001  
Title : METHOD FOR PRODUCING TITANIA-DOPED FUSED SILICA  
GLASS  
  
TC/A.U. : 1731  
Examiner : John M. Hoffmann  
  
Docket No. : SP01-095

Mail Stop: Amendments  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

### AMENDMENT

Sir:

In response to the Office action of March 12, 2007, please amend the above-identified as follows:

**Amendments to the Specification** begin on page 2.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 3 of this paper.

**Remarks/Arguments** begin on page 6 of this paper.

Appl. No.: 09/844,947  
Amdt. Dated: 23 May 2007  
Reply to Office Action of: March 12, 2007

#### Amendments to the Specification

Please amend the Specification on page 3, lines 2-13 as follows (insertions underlines, deletions struck through):

Embodiments of the invention provide a method for producing SiO<sub>2</sub>-TiO<sub>2</sub> glass substrates with low variations in CTE within the substrate. The method involves transporting silica and titania precursors in vapor form to deposition burners. The precursors exit the deposition burners where they react to form fine SiO<sub>2</sub>-TiO<sub>2</sub> particles ("soot"). The soot collects on a deposition surface to form a porous preform. The method further includes consolidating the porous preform to give a dense SiO<sub>2</sub>-TiO<sub>2</sub> glass in a separate step. Consolidating the glass in a separate step eliminates the need to capture the soot at consolidation temperatures. This allows the soot to be deposited at lower temperatures (typically, 200°C to 500°C lower) than possible with the conventional boule process. That is, the silica and titania particles are deposited at a temperature below that required to consolidate the porous preform into dense glass. SiO<sub>2</sub>-TiO<sub>2</sub> glass having low OH content can be produced by exposing the preform to a dehydrating agent, such as chlorine or fluorine, prior to consolidation. Chlorine and/or fluorine treatment would also remove impurities from the glass which could result in seeds.

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The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (amended) A method for producing a fused silica glass containing titania, comprising:
  - synthesizing particles of silica and titania by delivering a mixture of silica precursor and a titania precursor to a burner;
  - growing a ~~column of solid~~ columnar porous preform by successively depositing the particles of silica and titania on a deposition surface at a temperature below a minimum temperature at which the particles can consolidate that temperature required to consolidate the porous preform into dense glass while ~~successively~~ translating the deposition surface away from the burner; and
  - subsequently consolidating the porous preform into dense glass.
2. (previously presented) The method of claim 1, wherein a translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface and the burner during deposition.
3. (cancelled)
4. (previously presented) The method of claim 1, wherein consolidating the porous preform into dense glass comprises heating the porous preform to a temperature in a range from 1200 to 1900°C.
5. (original) The method of claim 1, further comprising dehydrating the porous preform by exposing the porous preform to a heated, halide-containing atmosphere prior to consolidation.

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6. (original) The method of claim 5, where in the heated, halide-containing atmosphere comprises chlorine.
7. (original) The method of claim 5, where in the heated, halide-containing atmosphere comprises fluorine.
8. (original) The method of claim 5, wherein the temperature of the heated, halide-containing atmosphere is in a range from 900 to 1100°C.
9. (original) The method of claim 1, wherein the glass contains 2 to 12% by weight titania.
10. – 12 (previously cancelled)
13. (previously presented) The method of claim 5, wherein a translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface and the burner during deposition.
14. (previously cancelled)
15. (previously presented) The method of claim 5, wherein consolidating the porous preform into dense glass comprises heating the porous preform to a temperature in a range from 1200 to 1900°C.
16. – 19. (previously cancelled)
20. (previously presented) The method of claim 1, wherein the minimum temperature is approximately 1200°C.



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21. (previously presented) The method of claim 20, wherein the temperature at which the particles are deposited is approximately 200 to 500°C less than the minimum temperature.
22. (cancelled)
23. (previously presented) The method of claim 1, wherein a variation on coefficient of thermal expansion of the dense glass is in a range from -5 ppb/°C to +5 ppb/°C.
24. (previously presented) The method of claim 1, further comprising rotating the deposition surface relative to the burner while successively depositing the particles on the deposition surface.

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**REMARKS/ARGUMENTS**

**1. Oath/Declaration**

Acknowledgement has not been made as to the acceptance of the Declaration filed December 21, 2006.

**2. Drawings**

Applicants thank the Examiner for indicating in the form PTO-948 dated May 13, 2004 that the formal drawings previously submitted have been approved.

**3. Specification**

The specification has been amended by incorporation of the language of original claim 13 into the paragraph on page 3, lines 2-13. Since this language appeared in the claims of the specification as-filed, applicants submit that this amendment does not introduce new subject matter into the specification.

**3. Claims**

Claims 1, 2, 4, 9, 13, 15, 20, 21, 23 and 24 remain in the application. The independent claim is claim 1. Claims 2, 4, 9, 13, 15, 20, 21, 23 and 24 depend on claim 1 either directly or indirectly by means of an intervening dependent claim.

Claim 1, line 7, has been amended herein to read "a ~~column of solid~~ columnar porous perform" as described in the Specification on page 5, lines 5-6; and has been further amended by deletion of the word "successively" from the phrase "suecessively translating". Claim 1 has further been amended as follows (insertions underlined, deletions stuck through)

"... depositing the particles of silica and titania on a deposition surface at a temperature below ~~a minimum temperature at which the particles can consolidate~~ that temperature required to consolidate the porous preform into dense glass ..."

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Applicants believe that the foregoing amendments overcome the Examiner's rejection described below regarding the use of the word 'while' and "successively" following one another. Further, there is

### 3. § 112 Rejections

The Examiner has rejected claims 1, 2, 4 – 9, 13, 15, 20, 21, 23, and 24 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirements for reasons set forth in the Office Action.

Regarding the Examiner's rejection of the phrases "a column of solid porous perform" and "successively translating," applicants submit that these rejections are moot in view of the amendments submitted herein (insertions underlined, deletions struck through) so that these phrases read "a ~~column of solid~~ columnar porous perform" and "successively translating," respectively. [See further comments in the second paragraph below.]

Regarding the Examiner's rejection of the phrase "a deposition surface at a temperature below a minimum temperature at which the particles can consolidate," this amendment is believed moot in view of the amendment to claim 1 and the specification, both of which use the language of original claim 13 in the application as-filed.

Regarding the Examiner statements concerning use of "while" and "successively" together, applicants submit that this rejection is not moot in view of the amendment described above in which the word "successively" was deleted. Using Figure 1 and the specification at page 4, lines 15-24, and page 5, lines 1-13, it is clear to one skilled in the art that during the deposition process the bait 34 on spindle 36 are "translated" or moved upward.

Finally, the Examiner states that the particles could not stick together if the temperature were as low as applicants' claims. This is interpreted as saying that the particles would not stick together at temperatures below consolidation temperatures. However, This is exactly what applicants' specification teaches; namely, that one can form a preform at temperatures below consolidation temperatures. Applicants refer the Examiner to the specification at page 3, lines 8-9 in which applicants state:

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Consolidating the glass in a separate step eliminates the need to capture the soot at consolidation temperatures.”

The Examiner also states that something that not be both “solid porous.” The Examiner is in error with this statement. Molecular sieves are a well known “solid porous” materials. Applicants submit that these grounds for rejection should properly be dismissed.

The Examiner also states that applicant has acquiesced that there is no support for claims 20 and 21. Applicants traverses. Claims 20 and 21 are as follows.

20. (previously presented) The method of claim 1, wherein the minimum temperature is approximately 1200°C.

21. (previously presented) The method of claim 20, wherein the temperature at which the particles are deposited is approximately 200 to 500°C less than the minimum temperature.

Regarding claim 20, applicants refer the Examiner to the Specification on page 5, lines 16-18, in which applicants indicate that consolidation temperatures are “typically in the range of 1200 to 1900 °C.” The lower temperature is 1200 °C. Those skilled in the art would understand that 1200 °C would be the minimum consolidation temperature. Applicants also refer the Examiner to page 3, lines 5-7 which indicate (1) that performing consolidation in a separate step allow eliminates the need to capture soot at consolidation temperatures and (2) that this allows the soot to be deposited at lower temperatures, typically 200 to 500 °C lower than in conventional boule processes. Applicants submit that the specification supports both claims 20 and 21 and that one skilled in the art would understand this and would understand exactly what these claims mean.

**THEREFORE**, in view of the foregoing amendments and the comments offered herein, applicants submit that the foregoing 35 U.S.C. § 112, first paragraph, rejection of claims 1, 2, 4-9, 13, 15, 20, 21, 23, and 24, as they may have been amended herein for clarity, may properly be withdrawn.

The Examiner has rejected claims 1, 2, 4 – 9, 13, 15, 20, 21, 23, and 24 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out

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and distinctly claim the subject matter with applicants regards as the invention.  
Applicants traverse the rejection.

Applicants submit that the rejections given under 35 U.S.C. § 112, second paragraph, are moot in view of the amendments made to the specification, for clarity, and the arguments given above which are incorporated herein in their entirety.

#### 4. Conclusion

Based upon the above amendments, remarks, and papers of record, Applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests reconsideration of the pending claims and a prompt Notice of Allowance thereon

Applicants hereby respectfully request that in the event that an extension of time is required to make this response timely, that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Walter M. Douglas at 607-974-2431.

23 May 2007  
Date

<b>CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. § 1.8</b>
I hereby certify that this paper and any papers referred to herein are being transmitted by facsimile to the U.S. Patent and Trademark Office at 571-273-8300 on:
<u>23 May 2007</u> Date
<u>Walter M. Douglas</u> Walter M. Douglas
<u>23 May 2007</u> Date

Respectfully submitted,  
CORNING INCORPORATED

Walter M. Douglas  
Walter M. Douglas  
Registration No. 34,510  
Corning Incorporated  
Patent Department  
Mail Stop SP-TI-03-1  
Corning, NY 14831

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### 3. Applicants' Response of December 21, 2006, pages 53-59.

Appl. No.: 09/844,947  
Arndt. Dated: October 25, 2006  
Reply to Office Action of: June 6, 2006

*See # Below*

#### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/844,947  
Applicant : Bradford G. Ackerman et al.  
Filed : April 27, 2001  
Title : METHOD FOR PRODUCING TITANIA-DOPED FUSED  
SILICA GLASS

TC/A.U. : 1731  
Examiner : Peter Chin  
Docket No. : SP01- 095

Mail Stop: Amendments  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

#### AMENDMENT

Sir:  
In response to the Office Action of December 14, 2006 and the Office Action mailed June 6, 2006, originally responded to by mail on October 25, 2006 with a two (2) month extension of time to make the response timely.

Please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 6 of this paper.

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Appl. No.: 09/844,947  
Amdt. Dated: October 25, 2006  
Reply to Office Action of: June 6, 2006

**Amendments to the specification**

On page 2, after the paragraph ending at line 22, please insert the following  
paragraph:

In another aspect the method of the invention is directed to synthesizing particles of silica and titania by delivering a mixture of a silica precursor and a titania precursor to a burner, growing a porous preform by successively depositing the particles on a deposition surface (herein also called a "bait") while rotating and translating the deposition surface relative to the burner, consolidating the porous preform into a partially dense glass.

Appl. No.: 09/844,947  
Amdt. Dated: October 25, 2006  
Reply to Office Action of June 6, 2006

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for producing a fused silica glass containing titania, comprising:
  - synthesizing particles of silica and titania by delivering a mixture of silica precursor and a titania precursor to a burner;
  - growing a column of solid porous preform by successively depositing the particles on a deposition surface at a temperature below a minimum temperature at which the particles can consolidate ~~either partially or fully~~ into dense glass while successively translating the deposition surface away from the burner; and
  - subsequently consolidating the porous preform into dense glass.
2. (previously presented) The method of claim 1, wherein a translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface and the burner during deposition.
3. (cancelled)
4. (previously presented) The method of claim 1, wherein consolidating the porous preform into dense glass comprises heating the porous preform to a temperature in a range from 1200 to 1900°C.
5. (original) The method of claim 1, further comprising dehydrating the porous preform by exposing the porous preform to a heated, halide-containing atmosphere prior to consolidation.
6. (original) The method of claim 5, where in the heated, halide-containing atmosphere comprises chlorine.
7. (original) The method of claim 5, where in the heated, halide-containing atmosphere comprises fluorine.



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8. (original) The method of claim 5, wherein the temperature of the heated, halide-containing atmosphere is in a range from 900 to 1100°C.
9. (original) The method of claim 1, wherein the glass contains 2 to 12% by weight titania.
10. – 12 (previously cancelled)
13. (previously presented) The method of claim 5, wherein a translation speed of the deposition surface is adjusted to maintain a substantially constant distance between an end portion of the porous preform remote from the deposition surface and the burner during deposition.
14. (previously cancelled)
15. (previously presented) The method of claim 5, wherein consolidating the porous preform into dense glass comprises heating the porous preform to a temperature in a range from 1200 to 1900°C.
16. – 19. (previously cancelled)
20. (previously presented) The method of claim 1, wherein the minimum temperature is approximately 1200°C.
21. (previously presented) The method of claim 20, wherein the temperature at which the particles are deposited is approximately 200 to 500°C less than the minimum temperature.
22. (cancelled)
23. (previously presented) The method of claim 1, wherein a variation on coefficient of thermal expansion of the dense glass is in a range from -5 ppb/°C to +5 ppb/°C.

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#### REMARKS

##### 1. Claims

Claims 1, 2, 4-9, 13, 15, 20, 21, 23 and 24 remain in this application. Claim 1 has been amended herein. Claim 1 is the only independent claim in the application. Claims 2, 4-9, 13, 15, 20, 21, 23 and 24 depend from claims 1 either directly or indirectly.

Claim 1 has been amended by deleting the phrase "either partially or fully" so that the claim now reads "... can consolidate ~~either partially or fully~~ into dense glass ...". While the specification does indicate that in the present invention the deposition temperatures are 200 - 500 °C lower than conventional processes which require the particles (soot) to be deposited at consolidation temperatures. [See page 3, lines 8-10.]

Applicants believe that the foregoing amendment does not introduce new matter into the specification.

##### 2. 35 U.S.C. §112 rejection

Claims 1, 2, 4-9, 13, 15, 20, 21, 23 and 24 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner states that he could:

"find no support for the claimed [1] "column of solid porous perform" (or any other column), or [2] "solid porous", [3] "while successively translating", [4] "a deposition surface at a temperature below a minimum temperature at which the particles can consolidate either partially or fully into dense glass: - either explicit or implicit. This is deemed to be a prima facie showing on [sic] failure to comply with the requirement. The burden is now on Applicant to show the requirement is complied with, or to amend the claims so that they comply."  
{Numerals added.}

Applicants submit the following to show that the claims are fully supported by the specification.

1. Regarding [1], the phrase complained of is fully supported by the specification; for example, at on page 2, lines 18-22; page 3, lines 5-6 and 20-21; page 4, lines 15-19; page 5, lines 3-8; the Abstract; and Figure 1. Page 2, lines 18-22 describes synthesizing particles ("soot", see page 3, line 5) by delivering a silica precursor and a

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titania precursor to burner and growing a porous perform by depositing the particles a on a deposition surface while rotating and translating the deposition surface relative to the burner. Particles are solids. Consequently, the perform that is formed is a solid perform. Combining these lines with Figure 1, particularly elements 34 and 40, and the specification on page 4, lines 15-19, it is clear that the preform can be formed on the "bait" (a term of art that describes a deposition surface) and that the perform can be formed in the form of a column. The column will be formed as one continues to raise spindle 36 while depositing the particle on perform 40 as it grows (see page 5, lines 7-8). In view of the foregoing, applicants submit that all the term of [1] that is complained of have been fully set forth in the specification.

2. Regarding [2], see [1] above. Particles are solids and the particles are used to form the 'porous perform.' Hence, implicitly the porous perform form by particles is a solid preform.
3. Regarding [3], the phrase complained of fully supported by the specification on page 2, lines 18-22; page 4, lines 15-24 and the Abstract. These lines clearly indicate that particles ( which are solids) are deposited to form a porous perform while the deposition surface (the bait)is being rotated and translated. In view of the foregoing, applicants submit that all the terms of [2] that are complained of have been fully set forth in the specification.
4. Regarding [4], claim 1 has been amended to remove the phrase "~~... either partially or fully. . .~~" as described above in Section 1 of these remarks. With regard to the remainder of the phrase complained of, please refer to the specification on page 3, lines 8-10, and also page 1, line 28, to page 2, line 7. The latter refers to "conventional processes" in which the soot (particles) is captured at consolidation temperatures, a process which leads to problems such as variations in composition which in turn lead to non-uniform thermal expansion properties. In contrast, the invention as described on page 3, lines 8-10, clearly indicates that the present invention eliminates the need to capture soot at consolidation temperatures. The present invention allows one to capture soot at temperatures 200-500 °C lower than the conventional process.

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Applicants respectfully submit that in view of the foregoing facts and arguments, the invention as now claimed is fully described in the specification. Consequently, applicants respectfully submit that it is proper for the Examiner to withdraw the §112, first paragraph, rejection of claims 1, 2, 4-9, 13, 15, 20, 21, 23 and 24.

**3. Oath/Declaration**

The Examiner has indicated that the oath/declaration is defective because it did not identify the application by number and filing date. A new oath/declaration is enclosed with this paper.

**4. Conclusion**

Applicants respectfully submit that all items listed in the Office Actions have been treated herein, and that the pending claims are now in condition for allowance. If there are further items whose speedy resolution would facilitate prosecution and allowance, applicants' undersigned attorney respectfully requests that the Examiner call him so that the items can be discussed and if possible suitable amendments entered into the case by Examiner's amendment.

Applicant believes that a two (2) month extension of time is necessary to make this Reply timely. Applicants respectfully request that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Walter M. Douglas at (607) 974-2431.

21 December 2006  
Date

<b>CERTIFICATE OF TRANSMISSION</b> <b>UNDER 37 C.F.R. § 1.1</b> I hereby certify that this paper and any papers referred to herein are being transmitted by facsimile to the U.S. Patent and Trademark Office at 703-872-9306 on: <u>21 December 2006</u> Date <u>Walter M. Douglas</u> Walter M. Douglas Date
--

Respectfully submitted,  
CORNING INCORPORATED

Walter M. Douglas 21 Dec 2006  
Walter M. Douglas  
Registration No. 34,510  
Corning Incorporated  
Patent Department  
Mail Stop SP-TI-03-1  
Corning, NY 14831

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reparable injury because the damages flowing from such losses are difficult to compute." 104. Lexmark's potential damages are difficult to measure or quantify, and thus Lexmark will likely suffer irreparable injury absent an injunction against SCC.

**V. THE PUBLIC INTEREST FACTOR FAVORS LEXMARK**

105. In copyright infringement cases, as with the irreparable harm factor, it is ordinarily presumed that an injunction will serve the public interest if the copyright holder shows a likelihood of success on the merits. *Concrete Mach.*, 843 F.2d at 612. Further, "it is virtually axiomatic that the public interest can only be served by upholding copyright protections and, correspondingly, preventing the misappropriation of the skills, creative efforts, and resources which are invested in the protected work." *Franklin Computer*, 714 F.2d at 1254. Moreover, a preliminary injunction is necessary "to preserve the integrity of the copyright laws which seek to encourage individual effort and creativity by granting valuable enforcement rights." *Aurri*, 672 F.2d at 620.

106. SCC contends that policies of the United States government favor the recycling and remanufacturing of toner cartridges. And further claims that "an injunction would threaten significant and truly irreparable harm to the environment." SCC Opp. at p. 30. This argument rests primarily upon the assumption that the majority of Lexmark's Prebate toner cartridges will end up in landfill should be the Court enjoin SCC from trafficking in its SMARTER microchips. The Court finds this claim to be largely unsubstantiated. Lexmark, in fact, has an extensive remanufacturing program for all of its used Prebate cartridges. Accordingly, the Court does not accept SCC's argument that an injunction will threaten significant environmental degradation.

107. SCC contends that public policy favors competition and supports the availability of multiple remanufacturers for toner cartridges. SCC further contends that public policy opposes the use of technological measures to prevent or limit remanufacturing. The Court has no trouble accepting SCC's claim that public policy generally favors competition. The Court finds, however, that this general principle only favors legitimate competition. Public policy certainly does not support

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Lexmark's Proposed Findings of Fact and Conclusions of Law where appropriate.

**ORDER**

In accordance with the Findings of Fact and Conclusions of Law entered on the same date herewith, IT IS HEREBY ORDERED that:

(1) Lexmark International, Inc.'s ("Lexmark") motion for a preliminary injunction is GRANTED;

(2) Static Control Components, Inc. ("SCC") shall cease making, selling, distributing, offering for sale or otherwise trafficking in the "SMARTER" microchips for the Lexmark T520/522 and T620/622 toner cartridges, until further Order from this Court; and

(3) the bond previously posted by Lexmark shall remain in effect until further Order from this Court.

**Moba B.V. v. Diamond Automation Inc.**  
U.S. Court of Appeals  
Federal Circuit  
Nos. 01-1063, -1083  
Decided April 1, 2003

**PATENTS**  
[1] Patent construction — Claims — Broad or narrow (§ 125.1305)  
Patent construction — Claims — Defining terms (§ 125.1305)  
**JUDICIAL PRACTICE AND PROCEDURE**  
Procedure — Jury trials (§ 410.42)  
Federal district court improperly allowed jury to import additional limitation into court's claim construction in upholding jury's conclusion that "guiding steps" recited in claim of patent for egg sorting method must be performed sequentially, since court found that jury reasonably could have determined from testimony that sequential performance is necessary characteristic of "guiding steps" limitation, whereas claim construction in ruling of law and court's instructions to jury regarding "guiding steps" did not require sequential performance; patentee did not waive

**CONCLUSION**

For the reasons stated above, Lexmark's Motion for a Preliminary Injunction shall be granted by Order of this Court, contemporaneously entered in accordance with these Findings of Fact and Conclusions of Law. In announcing this decision, the Court has adopted a majority of Lexmark's Proposed Findings of Fact and Conclusions. The Court has, however, conducted an extensive independent review of this matter and has made changes to

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its right to argue interpretation of "guiding steps" on appeal, even though it did not object to district court's claim construction or its instructions to jury, since patentee does not seek to alter district court's construction on appeal, and has argued consistently that neither language of claim itself, nor court's order defining that language, requires that "guiding steps" occur separately.

#### PATENTS

##### (2) Infringement — Tests (§ 120.09)

Infringement analysis for method claims that examines distinctions between implementing apparatus is disfavored; in present case, accused infringer's argument for noninfringement of method claim for egg sorting is without merit, since it focuses on distinctions between device that implements accused method and patentee's preferred embodiment for claimed method, and since apparatus of accused method performs all three "guiding steps" recited in claim.

##### (3) Infringement — Literal infringement (§ 120.05)

Patent construction — Claims — Defining terms (§ 125.1305)

Patent construction — Claims — Process (§ 125.1309)

Accused egg sorting device meets "holding station" limitation of asserted method claim, even though egg in accused method does not cease motion before being lifted to overhead conveyor, since claims do not require specific temporal limitation associated with term "holding," and ordinary meaning of "no hold" imposes no requirement that object remain stationary, since specification indicates that claimed process holds and moves egg at same time, and since term "holding station" thus does not require lack of motion.

##### (4) Infringement — Literal infringement (§ 120.05)

Infringement — Doctrine of equivalents — In general (§ 120.0701)

Patent construction — Claims — Process (§ 125.1309)

Accused egg sorting method does not meet, either literally or under doctrine of equivalents, limitation of asserted method claim that requires rotation of egg receiving means

"downwardly and away" from conveyor means, in order "to urge the received eggs downwardly," since, in context of patent, "urge" should be given its broader meaning of "to cause to move," since accused infringer presented evidence that brush belt in device of accused method does not guide eggs downwardly relative to their initial position upon receipt in brush belt, and since device performs different function, in different way, to obtain different result from language of limitation.

##### (5) Patentability/Validity — Specification (§ 115.1103)

Compliance with written description requirement of 35 U.S.C. § 112 does not require particular form of disclosure, provided person of skill in art could determine from specification that inventor possessed invention at time of filing; in present case, patent for egg sorting method need not disclose conveyor lifting system encompassed by asserted claim, since specification describes every element of claim in sufficient detail that one of ordinary skill in art would recognize that inventor possessed invention at time of filing.

##### (6) Patentability/Validity — Specification (§ 115.1105)

Substantial evidence supports finding that claim for egg sorting method is not invalid for lack of enablement, since there is no evidence recounting amount of experimentation person of ordinary skill in art would require to develop conveyor lifting system in view of patent's disclosure, and since inference of undue experimentation cannot be drawn from limited general testimony concerning development of conveyor lifting system taken separately from disclosure of patent.

Particular patents — General and mechanical — Egg sorting

4,519,494, McEvoy and Thomas, egg handling system, judgment of noninfringement affirmed.

4,519,505, Thomas, egg transfer system, judgment of noninfringement reversed.

Appeal from the U.S. District Court for the Eastern District of Pennsylvania, Kaufman, J. Action by Moba B.V., Sualkat B.V., and FPS Food Processing Systems Inc. against Diamond Automation Inc. for declaratory

66 USPQ2d

Moba B.V. v. Diamond Automation Inc.

judgment of patent invalidity and noninfringement, in which defendant counterclaimed for declaratory judgment of validity and infringement. Defendant appeals from jury verdict of noninfringement, and from denial of its motion for judgment of infringement as matter of law, and plaintiffs cross-appeal from judgment that asserted patent claims are not invalid. Affirmed in part, reversed in part, and remanded; Rader, J., concurring in separate opinion; Bryson, J., concurring in separate opinion.

Jon A. Baughman, Erik N. Vidolock, and Nicole D. Gall, of Pepper Hamilton, Philadelphia, Pa.; Marvin Perry and Linda R. Poteste, of Larson & Taylor, Alexandria, Va., for plaintiffs/cross-appellants.

Sheila Montazavi, of Kenyon & Kenyon, New York, N.Y., for defendant-appellant.

Before Rader, Schall, and Bryson, circuit judges.

#### Per curiam.

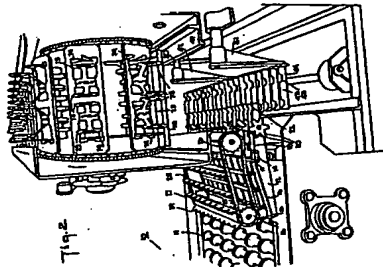
At trial, a jury in the United States District Court for the Eastern District of Pennsylvania found that Moba, B.V., Sualkat, B.V., and FPS Food Processing Systems, Inc. (collectively FPS) did not infringe patents assigned to Diamond Automation, Inc. (Diamond). See *Moba, B.V. v. Diamond Automation, Inc.*, No. 95-CV-2631, 2000 U.S. Dist. LEXIS 15483, at \*43 (E.D. Pa. Sept. 29, 2000). In response to a motion for judgment as a matter of law (JMOL), the district court correctly discerned that substantial evidence supports the jury's verdict that machines sold by FPS and used by its customers do not practice the method of patent. However, no reasonable jury could find that machines sold by FPS and used by its customers do not practice the method of patent. Thus, this court affirms-in-part, reverses-in-part, and remands for a determination of damages.

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Diamond is a Michigan corporation that manufactures and sells high-speed egg processing machines to sort batches of eggs into different categories by weight and quality. Diamond developed these machines during the early 1980s with technology that significantly increased the processing speed for eggs. Diamond obtained various patents covering aspects of that technology, including the '494- and '505 patents, and United States Patent No. 4,569,444 ('444 patent) and

4,505,373 ('373 patent). While Diamond asserted all of these patents at trial, only the '505 and '494 patents appear in this appeal. The '505 patent relates generally to "front end" processing of eggs, while the '494 patent relates generally to "back end" processing of eggs.

The "front end" process first washes the eggs, then introduces them into a candling station where a high intensity light source checks the eggs for defects such as blood spots or cracks. The process then weighs the eggs. A computer stores this information for use in sorting the eggs at a later point. Figure 2 of the '505 patent illustrates an embodiment of the invention designed to weigh eggs and to lift them to an overhead conveyor.



Claim 24 of the '505 patent corresponds generally to the subject matter of Fig. 2.

24. A method for advancing a plurality of rows of eggs from a candling station through a plurality of weighing stations in an egg grading apparatus, comprising:

conveying eggs from said candling station to elongated guide means disposed adjacent to said candling station, continuously advancing said eggs on said guide means through said weighing stations,

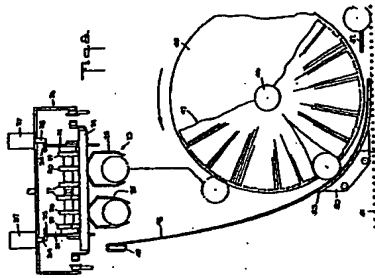
simultaneously with said step of advancing, weighing said eggs at said weighing stations.

guiding said eggs from said weighing stations first to a plurality of egg holding stations located downstream of said guide means and then to a plurality of locations longitudinally spaced-apart from and substantially horizontally co-planar with said holding stations.

guiding further eggs to said plurality of holding stations, and lifting said eggs simultaneously from said holding stations and said plurality of longitudinally spaced-apart locations.

'505 patent, col. 13, ll. 33-34 (emphasis added).

The "back end" process receives eggs from "front end" processing and transfers them to an overhead conveyor. This conveyor carries the eggs in rows until dropping off each individual egg at a different receiving station based on the information in the computer. At each station, the eggs are either packaged or discarded. Figure 8 of the '494 patent illustrates an embodiment of the invention designed to receive eggs from an overhead conveyor for transport to a packer.



Claim 28 of the '494 patent corresponds generally to the subject matter of Fig. 8.

28. A method of transferring eggs delivered in spaced-apart aligned relationship by a first conveyor means to a receiving station, comprising the steps of,

delivering eggs to said receiving station in parallel spaced apart rows on said first conveyor means,

releasing eggs from said first conveyor means at the receiving station in accordance with a predetermined requirement,

positioning a receiving means below the first conveyor means so as to receive therein and deliver to a common member the eggs released from the parallel spaced-apart rows of the first conveyor means,

receiving said eggs in the receiving means disposed at said receiving station whereby the released eggs from both said parallel spaced apart rows of eggs fall on and are received by said receiving means,

raising the receiving means downwardly and away from said first conveyor means to urge the received eggs downwardly,

guiding said eggs received in said receiving means downwardly and away from said receiving means, and

conveying said eggs away from said receiving means on second conveyor means,

said step of releasing comprising releasing said eggs successively from said first conveyor means at said receiving station along the length of said receiving means, and said step of conveying comprising conveying said eggs individually in rows away from said receiving means on said second conveyor means.

'494 patent, col. 12, ll. 9-40 (emphasis added).

Moba, B.V., and Staalkat, B.V., are Dutch companies that also manufacture and sell high-speed egg processing machines, such as the Moba Omnia and the Staalkat Selecta. FPS Food Processing, a Pennsylvania corporation, sells Moba's and Staalkat's egg processing machines in the United States. In the United States market, FPS and Diamond are the only significant competitors in the manufacture and sale of high-speed egg processing machines.

In 1994, Diamond filed a patent infringement suit in the United States District Court for the Eastern District of Michigan against FPS. The district court dismissed that case for lack of personal jurisdiction. In 1995, FPS filed suit in the United States District Court for the Eastern District of Pennsylvania seeking a declaratory judgment that the '444, '494,

373, and '505 patents are invalid and not infringed by the Moba Omnia and the Staalkat Selecta. Diamond filed a declaratory judgment counterclaim that the patents are valid and infringed. After discovery, the district court entered the patent claim. Then a jury heard the case from January 28, 2000 to February 25, 2000. On February 22, 2000, before the jury moved to consider its verdict, Diamond moved for entry of JMOL under Rule 50(a) of the Federal Rules of Civil Procedure that FPS infringed and induced infringement of the four patents. In its February 25, 2000 verdict, the jury found that those patents were not invalid and not infringed. On March 6, 2000, the district court denied Diamond's February 22, 2000 JMOL motion, and entered judgment in favor of Diamond on the validity issues and in favor of FPS on the infringement issues. Diamond renewed its motion for JMOL regarding infringement, which the district court again denied.

Diamond argues that claim 24 of the '505 patent and claim 28 of the '494 patent cover methods used in both the Moba Omnia and the Staalkat Selecta. Diamond also contends that FPS has induced its customers to infringe those claims by selling them the Moba Omnia and the Staalkat Selecta and by training them to use those machines. Diamond appeals. Therefore, the district court's denial of JMOL on these issues, FPS cross-appeals the jury's determination that claim 24 of the '505 patent and claim 28 of the '494 patent are not invalid. Because Diamond no longer pursues any claims arising from the '444 or '373 patents, or claim 34 of the '494 patent, this court need not address those questions. This court has jurisdiction over the present appeal under 28 U.S.C. § 1295(a)(1) (2000).

## II.

This court reviews claim construction without deference. *Obor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454, 46 USPQ2d 1169, 1172 (Fed. Cir. 1998) (en banc). This court accords substantial deference to a jury's factual application of a claim construction to the accused device in an infringement determination. *Embrex, Inc. v. 3M Corp.*, 216 F.3d 1343, 1348-49, 55 USPQ2d 1161, 1164 (Fed. Cir. 2000).

This court reviews a district court's denial of JMOL without deference, reversing only if substantial evidence does not support a jury's factual findings or if the law cannot support the legal conclusions underpinning the jury's factual findings. *Cybor Corp.*, 138 F.3d at

1454. "A district court may overturn a jury's verdict only if upon the record before the jury, reasonable jurors could not have reached that verdict." *LNP Eng'g Plastics, Inc. v. Miller Weate Mills, Inc.*, 275 F.3d 1347, 1353, 61 USPQ2d 1193, 1197 (Fed. Cir. 2001).

Claim language defines claim scope. *See, e.g., In re Manushkin Elec. Corp.*, 75 F.2d 1801, 1121, 227 USPQ 571, 586 (Fed. Cir. 1985) (en banc). As a general rule, claim language is given the ordinary meaning of the words in the normal usage of the field of the invention. *Toro Co. v. White Consoil, Indus.*, 199 F.3d 1295, 1299, 53 USPQ2d 1065, 1067 (Fed. Cir. 1999). Nevertheless, the inventor may set his own terminology and use the specification to supply new meanings for terms either explicitly or by implication. *Morham v. Westview Instruments, Inc.*, 52 F.3d 967, 979, 34 USPQ2d 1321, 1330 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370, 38 USPQ2d 1461 (1996). Thus, to help determine the proper construction of a patent claim, a construing court consults the written description, and, if in evidence, the prosecution history. *Id.* at 979-80.

After claim construction, the fact finder compares the properly construed claim with the allegedly infringing device. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1360, 54 USPQ2d 1308, 1312 (Fed. Cir. 2000). Infringement requires the patentee to show that the accused device contains or performs each limitation of the asserted claim. *Mar-Hamilton Grinders v. LeGard, Inc.*, 156 F.3d 1206, 1211, 48 USPQ2d 1010, 1014-15 (Fed. Cir. 1998), or an equivalent of each limitation not satisfied literally. *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (41 USPQ2d 1865) (1997). The sale or manufacture of equipment to perform a claimed method is not direct infringement within the meaning of 35 U.S.C. § 271(a). *Mendenhall v. Cedarapids, Inc.*, 5 F.3d 1557, 1579, 28 USPQ2d 1081, 1100 (Fed. Cir. 1993).

In this case, the record shows that FPS's customers use the method of the Moba Omnia to process eggs in the United States. Hence, to show infringement Diamond needs only to prove that the Moba Omnia performs the method of claim 24 when it processes eggs.

## "guiding steps"

(1) Based upon its claim construction, the district court instructed the jury, in relevant part, that the guiding steps of claim 24 "are defined as follows: (1) Carrying eggs to hold-

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ing stations: (2) Carrying eggs from the holding stations to the spaced apart locations; and (3) Carrying more eggs to the holding stations. At trial, Diamond did not object to either step's or to the jury instructions about that term. Following the jury verdict of non-infringement, the district court denied Diamond's JMOL motion. In its denial, the district court acknowledged that its interpretation of guiding steps left undetermined whether the claim requires sequential performance of the steps. Then the trial court reasoned that the jury reasonably could have determined from the testimony presented that sequential performance is a necessary characteristic of the "guiding steps." The district court's instruction to the jury did not require sequential performance. In essence, the district court allowed the jury to add an additional limitation to the district court's construction of "guiding steps." In this, the district court erred. Claim construction is a question of law and is not the province of the jury. *Markman*, 52 F.3d at 979.

This error takes on significance in this appeal because the jury found that the Moba Omnia does not infringe. The record before us discloses no alternative basis upon which a reasonable jury could find that the Moba Omnia does not infringe other than that the Moba Omnia does not satisfy the guiding steps limitation. Thus, by allowing the jury to import an additional limitation into the claims, the district court fundamentally altered the verdict.

Because Diamond did not object to the district court's claim construction or instructions to the jury, FPS contends that Diamond has waived its right to argue the interpretation of "guiding steps" on appeal. The doctrine of waiver as applied to claim construction prevents a party from offering a new claim construction on appeal. *Interactive Gift Express v. Compuserve Inc.*, 256 F.3d 1323, 1346, 59 USPQ2d 1401, 1418 (Fed. Cir. 2001). Moreover, a party's objection to a jury instruction is waived unless that party objects to the instruction before the jury retires to consider the verdict. Fed. R. Civ. P. 51. In this case, however, waiver does not bar Diamond's argument. Diamond does not now contest the district court's instruction to the jury on the meaning of "guiding steps." Essentially Diamond does not wish to alter the district court's claim construction on appeal, but seeks enforcement of the trial court's claim construction.

Diamond has argued consistently, in its JMOL motions and in its argument on appeal here, that "[n]either the language of the claim itself nor the Court's order defining this language requires that the 'guiding steps' occur separately." Thus, Diamond has consistently protested the error that this court will not appear on appeal. Thus, this court will not appear on appeal to prevent Diamond from protecting the original breadth of the binding claim construction presented by the district court to the jury from *post facto* imposition of an additional limitation. *Interactive Gift Express*, 256 F.3d at 1346. Application of waiver in this case would essentially render unreviewable the district court's error. In sum, Diamond has not waived its argument that the guiding steps may be performed simultaneously.

Nowhere does the plain language of claim 24 require separate and consecutive performance of the various guiding steps. Rather, such a construction is contrary to the teachings of the '505 patent. For example, the specification explicitly describes simultaneous performance of guiding steps two and three. '505 patent, col. 5, l. 54 to col. 6, l. 3. Moreover, simultaneous performance of the guiding steps is consistent with operating at a significant rate of speed, a stated object of the invention. '505 patent, col. 2, l. 3-7. The prosecution history is also consistent with this claim construction. Hence, this court, like the district court as well, construes the guiding steps to include simultaneous performance.

[2] FPS argues that, irrespective of whether claim 24 allows simultaneity, the method practiced by the Moba Omnia cannot infringe literally because it does not perform entirely at least one of the required guiding steps. This argument simply repackages FPS's argument for sequential performance of the guiding steps. FPS's argument focuses on distinctions between the Moba Omnia and the patentee's preferred embodiment for the claim 24 method. This court has discredited an infringement analysis for method claims that examines distinctions between implementing apparatuses. *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476, 1482, 221 USPQ 649, 653 (Fed. Cir. 1984) ("[T]he law recognizes the irrelevance of apparatus distinctions in determining infringement of process claims.").

Like the device of Fig. 2, the Moba Omnia lifts eggs to an overhead conveyor for transport. To position the eggs for lifting, the Moba Omnia employs a continuously moving transport conveyor that slows without stopping as each egg passes under the overhead conveyor.

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In these actions, the Moba Omnia practices all three guiding steps. With a focus on the movement of the eggs (the subject matter of the method claim) in the Moba Omnia, rather than the movement of the Moba Omnia itself, each of these steps is evident. As required by the first guiding step of claim 24, the Moba Omnia moves a first egg to a holding station. To move a stationary holding station, the Moba Omnia then moves the first egg to a spaced-apart location, the second guiding step. Simultaneously, the Moba Omnia moves a second egg to the holding station to perform the third guiding step. The first and second eggs are then ready for simultaneous lifting. In sum, the record evidence provides no basis upon which a reasonable jury could find that the Moba Omnia does not perform the three guiding steps of the '505 patent's claim 24.

#### "holding station"

[3] The district court correctly construed the "holding station" of claim 24 of the '505 patent as "a first location in space to which an egg is moved and at which the egg may maintain position until the egg is lifted simultaneously with an egg at a spaced-apart location." Nonetheless, FPS argues that the district court's construction requires that an egg cease motion before the lift to the overhead conveyor. The claims simply do not require a specific temporal limitation associated with the term "holding." Indeed the specification states that the holding station positions an egg relative to the overhead conveyor for pickup by the overhead conveyor. *See*, e.g., '505 patent, col. 2, l. 44-58, col. 6, l. 4-8. The specification actually speaks of eggs that are "held" as they move. *Id.* at col. 5, l. 2-6 ("The disks each include a plurality of peripheral recesses which are disposed in horizontal alignment so as to receive and hold eggs advanced along the guide bars as they are transferred to the holding stations."). Moreover, the ordinary meaning of "to hold" is "to keep in position, guide, control, or manage." *The Oxford English Dictionary* (2d ed. 1989). This meaning also imposes no requirement that an object remain stationary.

Moreover, as this court has repeatedly counseled, the best indicator of claim meaning is its usage in context as understood by one of skill in the art at the time of invention. *Markman*, 52 F.3d at 986. In this instance, the context is the swift and safe movement of eggs. As indicated by the specification, the process holds the egg at the same time it moves the egg, thus achieving the dual goals of precision and speed. The process may hold and move an

egg at the same time. In sum, the district court correctly construed the term "holding." The term "holding station" also does not require lack of motion.

To show that the Moba Omnia does not infringe claim 24, FPS relies entirely upon evidence that eggs in the Moba Omnia do not stop before they are picked up. As described above, however, the claim does not require a stationary holding station. To satisfy the holding station requirement, the Moba Omnia needs only employ "a first location in space to which an egg is moved and at which the egg may maintain position until the egg is lifted simultaneously with an egg at a spaced-apart location." Whether or not eggs stop before the pick up, the record shows that the Moba Omnia employs such a first location. In view of the undisputed record evidence, no reasonable jury could find that the Moba Omnia does not move an egg to a holding station as claimed.

In sum, the evidence of record consistent with the correct claim construction shows that the method performed by the Moba Omnia includes all three "guiding steps" and that the Moba Omnia moves eggs to a "holding station." Because no reasonable jury could find on the record evidence that the method performed by the Moba Omnia does not infringe literally and directly claim 24 of the '505 patent, the district court erred in not granting JMOL on that issue.

#### B.

Turning to claim 23 of the '494 patent, the parties dispute the district court's construction of the limitation "predetermined sequence" and two limitations containing the phrase "downwardly and away." Because construction of the first "downwardly and away" limitation disposes of the question of infringement, this court need not address the other limitations.

The first "downwardly and away" limitation recites: "raising the receiving means downwardly and away from said first conveyor means to urge the received eggs downwardly." The district court construed this claim language: "[T]he receiving means\* must be rotated downwardly (i.e. toward the ground) and be rotated away from the main

\* The district court determined that the language "receiving means" does not involve § 112, (c) As the district court's failure to construe this limitation as means-plus-function is not disputed by the parties, this court offers no judgment as to the correctness of that determination.



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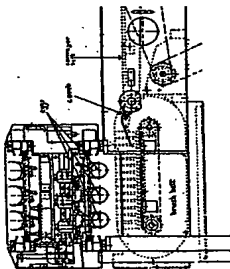
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egg-carrying conveyor from which the eggs are released.<sup>44</sup> With some slight clarification, the district court construed this claim limitation correctly. The slight clarification notes that the limitation constrains the motion of the received eggs as well as the motion of the receiving means. Specifically, the first "downwardly and away" limitation also requires that the receiving means move the eggs downwardly.

The claim recites that the receiving means "urge(s) the received eggs downwardly." The patent does not explicitly define "urge." In one sense, "to urge" means simply to press or to push. See, e.g., *The Oxford English Dictionary* (2d ed. 1989). This meaning of "urge," however, would place the preferred embodiment outside the claim scope. *Vitronier*, at 1583 (a claim interpretation that puts the preferred embodiment outside the claim is "travesty, if ever, correct and would require a highly persuasive evidentiary support."). Moreover this definition of "urge" makes infringement depend on the downward force exerted on the eggs by the rotating receiving means. A receiving means, such as that shown in Fig. 4 of the '494 patent, may rotate downward slowly and support the received eggs against the force of gravity. In doing so, the downward rotation would exert an upward force on the received eggs, i.e., it would "urge" the received eggs upward rather than downward as claim 28 requires. The patent does not show, however, that the downward force is a defining limitation.

[4] Another ordinary meaning of "to urge" avoids exclusion of the preferred embodiment from the claims. Specifically, "to urge" may mean "to cause to move, hasten, or gather speed." *The Oxford English Dictionary* (2d ed. 1989). This definition receives support from the patent specification. The specification clarifies that "to urge" means broadly to move or to carry and that the receiving means may slow the motion of the eggs. For example, the patent specification notes that the receiving means "reduce(s) the speed at which the eggs fall and gently move(s) the eggs downwardly and outwardly away from carriage assemblies." '494 patent, col. 5, ll. 64-66, col. 7, ll. 1-3. Thus, in the context of this patent, this court employs the broader meaning of "to urge," namely, to cause to move.

The Staalkat Selecta employs a brush belt to receive eggs, as shown below. Once the brush belt receives the eggs, it transports the



At trial, FFS presented substantial evidence that the brush belt of the Staalkat Selecta does not move the eggs downwardly as required by the literal language of claim 28. FFS also presented substantial evidence to support that the Staalkat Selecta does not infringe claim 28 under the doctrine of equivalents. For example, Dr. Kirk, an expert witness for FFS, testified that the Selecta's brush belt does not guide eggs downwardly. Rather, the brush guides eggs over a linear path rather than a curved path. As a result, the eggs moved upward rather than downward relative to their initial position upon receipt in the brush belt. This evidence supports the jury's verdict of no infringement. Even applying the doctrine of equivalents, the Staalkat Selecta performs a different function in a different way to obtain a different result from the language of the claim limitation. Thus, substantial evidence supports the jury's finding that the Staalkat Selecta's method does not satisfy the first "downwardly and away" limitation of claim 28, either literally or under the doctrine of equivalents. Hence, this court affirms the district court's denial of JMOL. Because the Staalkat Selecta does not satisfy the first "downwardly and away" limitation, this court need not reach other potential grounds to support the jury's verdict.

### III.

The Patent Act imposes indirect infringement liability on a party who actively induces others to directly infringe a patent. 35 U.S.C. § 271(b) (1994). Diamond appeals the district court's denial of its motion for JMOL. But FFS indirectly infringes claim 24 of the '505 patent and claim 28 of the '494 patent. In re-

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viewing the district court's denial of Diamond's JMOL motion, this court presumes that the jury resolved all factual disputes in favor of the prevailing party and leaves those findings undisturbed as long as substantial evidence supports them. *Siba Neurosciences, Inc. v. Cadus Pharm. Corp.*, 223 F.3d 1349, 1354, 55 USPQ2d 1927, 1930 (Fed. Cir. 2000).

The district court denied Diamond's JMOL on inducement because the jury determined that "none of the machines sold by FFS infringe any of the patents in suit." *Moba*, No. 95-CV-2631, 2000 U.S. Dist. LEXIS 13483, at \*43. Because this court upholds the verdict at \*43, because this court is not directly infringing, the trial court correctly determined that FFS does not indirectly infringe that claim 28 of the '494 patent is not directly infringing. The trial court correctly determined that FFS does not indirectly infringe that claim 28 of the '494 patent. *Mer-Coil Sys. Corp. v. Korners Unlimited, Inc.*, 803 F.2d 684, 687, 231 USPQ 474, 477 (Fed. Cir. 1986). ("There can be no inducement of infringement without direct infringement by some party."). However, this court has held that the Moba Omnia method directly infringes claim 24 of the '505 patent. Therefore, the issue of infringement by FFS depends on whether FFS actively induced (d) infringement "within the meaning of 35 U.S.C. § 271(b)."

Although § 271(b) does not use the word "knowingly," this court has uniformly imposed a knowledge requirement. *Weier Tech. Corp. v. Calco Ltd.*, 830 F.2d 660, 7 USPQ2d 1097 (Fed. Cir. 1988); *C.R. Bard, Inc. v. Advanced Card. Sys., Inc.*, 911 F.2d 670, 15 USPQ2d 1340 (Fed. Cir. 1990). This court defined the generally applicable intent standard in *Herwin-Packard Co. v. Bousch & Lomb, Inc.*, 929 F.2d 1464, 1468-69, 15 USPQ2d 1525, 1528-29 (Fed. Cir. 1990). In *Herwin-Packard*, this court held that "proof of actual intent to cause the acts which constitute the infringement is a necessary prerequisite to finding active inducement" under § 271(b). *Herwin-Packard*, 909 F.2d at 1469. *Herwin-Packard Co. (HP)*, was the assignee of the LaBarre patent on aspects of X-Y plotter technology. *Bausch & Lomb, Inc. (B & L)*, manufactured and sold X-Y plotters and a variety of other electronic equipment through a division that it sold to Ametek, Inc. HP alleged that B & L induced infringement of the LaBarre patent by its sale to Ametek. This court found, however, that the sale did not evince an intent to induce infringement but, rather, merely an intent to sell at the highest price. This court particularly noted that B & L had no interest in, nor control over, Ametek's use of the pur-

A patent specification must contain an adequate written description. 35 U.S.C. § 112, § 1 (1994). Whether a specification complies with the written description requirement of § 112, § 1 is a question of fact that this court reviews for substantial evidence. *Advanced Display Sys.*, 212 F.3d at 1281.

FFS argues here that if claim 24 of the '505 patent encompasses lifting eggs from a moving conveyor as this court has determined, then claim 24 must be invalid because the '505 patent specification discloses no such conveyor mechanism. In support of this proposition, FFS cites to this court's decision in *Genray Gallery, Inc. v. Berklene Corp.*, 134 F.3d 1473, 43 USPQ2d 1408 (Fed. Cir. 1998). Federal Circuit case law reflects two applications of 35 U.S.C. § 112, § 1. First, in 1967,

### IV.

The Patent Act erects a presumption of validity for an issued patent. 35 U.S.C. § 282 (1994). Therefore, invalidity requires clear and convincing evidence. *Id.*; *Advanced Display Sys. v. Kent State Univ.*, 212 F.3d 1272, 34 USPQ2d 1673 (Fed. Cir. 2000). Because this court has determined that FFS may cause this court to determine that FFS may infringe claim 24 of the '505 patent, depending on resolution of the inducement issue, this court also addresses FFS's appeal of that claim. FFS argues that the claim is invalid as anticipated, not enabled, and not adequately described.

### A.

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this court's predecessor inaugurated use of § 112 to prevent the addition of new matter to claims. *In re Ruchtg.*, 379 F.2d 990, 154 USPQ 118 (CCPA 1967). As this court's predecessor noted, "[t]he function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application, of the specific subject matter claimed by him." *In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). Although the statute proscribes addition of new matter to a specification or claims under § 132, the United States Court of Customs and Patent Appeals decided to police the addition of new matter to claims separately using § 112. *In re Ruchtg.*, 680 F.2d 1212, 1214, 211 USPQ 323, 325-26 (CCPA 1981). This court's predecessor explained that the use of § 132 or § 112 was synonymous because "a rejection of an amended claim under § 132 is equivalent to a rejection under § 112, first paragraph." *Id.* Since then, this court has continued to use § 112 to ensure that a patentee had possession at the time of filing of subject matter subsequently claimed. In this court's most recent application of the written description doctrine, it noted: "The purpose of the written description requirement is to prevent an applicant from *later* asserting that he invented that which he did not, the applicant has a patent is therefore required 'to recoup his invention in such detail that his future claims can be determined to be encompassed within his original, creation.'" *Angen Inc. v. Hoechst Marion Roussel Inc.*, 314 F.3d 1313, 1330, 65 USPQ2d 1383, 1397 (Fed. Cir. 2003) (citing *Ver-Cath Inc. v. Makurka*, 935 F.2d 1555, 1561, 19 USPQ2d 1111, 1115 (Fed. Cir. 1991)). In that setting, the written description is the metric against which a subsequently added claim is measured to determine if it is due the priority date of the original patent. *Id.* at 1560 ("The question raised by these situations is most often phrased as whether the application provides 'adequate support' for the claim(s) at issue; it has also been analyzed in terms of 'new matter' under 35 U.S.C. § 132."); *In re Wright*, 866 F.2d 422, 424, 9 USPQ2d 1649, 1651 (Fed. Cir. 1989) ("When the scope of a claim has been changed by amendment in such a way as to justify an assertion that it is directed to a different invention than was the original claim, it is proper to inquire whether the newly claimed subject matter was described in the patent application when filed as the invention of the applicant. That is the essence of the so-

called 'description requirement' of § 112, first paragraph.").

*Genery Gallery*, the patentees described in the specification a sectional sofa with a center console including recliner controls. The specification as filed clearly identified the console as the only possible location for the controls. From the specification, it was clear that the patentees considered placement of the controls in the center console "to be an essential element of this invention." *Genery Gallery*, 134 F.3d at 1479. Hence, this court limited the scope of the patentee's claims to a sofa with controls located in a center console. "Accordingly, [the patentee's] original disclosure serves to limit the permissible breadth of his *later-drafted claims*." *Id.* at 147 (emphasis added). Thus, because *Genery Gallery* applied § 112, § 1, to hold the patentees to the scope of its original filing, it does not apply in this case where FFS made no allegation as to the disclosure of the '505 patent did not show possession of a later-filed claim.

The second application of the written description requirement is reflected in *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). There, this court invoked the written description requirement in a case without priority issues. Invoking § 112, Lilly required a precise definition of a DNA sequence in the patent specification. In more recent cases, however, this court has distinguished *Lilly*. For instance, in *Exco Biochem, Inc. v. GenProbe, Inc.*, 296 F.3d 1316, 63 USPQ2d 1069 (Fed. Cir. 2002), neither the specification nor the deposited biological material recited the precise "structure, formula, chemical name, or physical properties" required by *Lilly*, *Id.* at 1324 (quoting *Lilly*, 119 F.3d at 1560). Although this court initially determined that the specification in *Exco* did not satisfy the *Lilly* disclosure rule, it revisited the issue and remanded to the district court. The court instructed:

On remand the court should determine whether a person of skill in the art would glean from the written description, including information obtainable from the deposition of the claimed sequences, subsequences, mutated variants and mixtures sufficient to demonstrate possession of the genetic scope of the claims.

*Exco*, 296 F.3d at 1328. Similarly, in this court's most recent pronouncement, it noted: "More recently, in *Exco Biochem*, we clarified that *Eli Lilly* did not hold that all func-

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tional descriptions of genetic material necessarily fall as a matter of law to meet the written description requirement; rather, the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure.

*Angen*, 314 F.3d at 1332.

[5] The test for compliance with § 112 has always required sufficient information in the original disclosure to show that the inventor possessed the invention at the time of the original filing. *See Ver-Cath*, 935 F.2d at 1561 ("Adequate description of the invention guards against the inventor's overreaching by insisting that he recoup his invention in such detail that his future claims can be determined to be encompassed within his original creation"). The possession test requires assessment from the viewpoint of one of skill in the art at 1563-64 ("the applicant must convey with reasonable clarity to those skilled in the art, as of the filing date sought, he or she was in possession of the invention") (emphasis in original); *Union Oil Co. of Cal. v. Atlantic Richfield Co.*, 208 F.3d 989, 997, 54 USPQ2d 1277, 1332 (Fed. Cir. 2000) ("The written description requirement does not require the applicant to describe exactly the subject matter claimed, [instead] the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed") (citation omitted). In *Exco* and *Angen*, the record showed that the specification that taught one of skill in the art to make and use an invention also convinced that artisan that the inventor possessed the invention. Similarly in this case, the *Lilly* disclosure rule does not require a particular form of disclosure because one of skill could determine from the specification that the inventor possessed the invention at the time of filing.

Accordingly, substantial evidence supports the jury's finding that the '505 patent is not invalid for lack of an adequate written description. The '505 patent specification describes every element of claim 24 in sufficient detail so that one of ordinary skill in the art would recognize that the inventor possessed the invention at the time of filing. FFS's contention that the '505 patent does not adequately disclose lifting eggs from a moving conveyor merely revisits its non-infringement argument in the cloak of a validity challenge. As noted, the jury found that one of skill in the art would discern possession of the invention at the time of filing, a finding supported by sub-

stantial record evidence. Therefore, the trial court correctly determined that claim 24 is not invalid for lack of an adequate written description.

## B.

The patent specification must disclose information sufficient to enable those skilled in the art to make and use the claimed invention. 35 U.S.C. § 112 § 1. That some experimentation is permissible, so long as it is not undue, is a question of law that this court reviews *de novo*. *Molexion Research Corp. v. CDS, Inc.*, 793 F.2d 1261, 1268, 229 USPQ 805, 810 (Fed. Cir. 1986). This court reviews a jury's underlying factual determinations related to enablement for substantial errors. *Mitsubishi Elec. Corp. v. Amper Corp.*, 180 F.3d 1300, 1309, 51 USPQ2d 1910, 1916 (Fed. Cir. 1999).

[6] FFS contends that the specification does not enable one of ordinary skill in the art to lift eggs from a moving conveyor belt without undue experimentation. Nevertheless, FFS presented no record evidence recouping the amount of experimentation one of skill in the art would require to develop the conveyor lifting system of the Moba Omnia in view of the '505 patent disclosure. Rather, FFS asked the jury and asks this court to draw the inference of undue experimentation based on limited general testimony of the development of that conveyor lifting mechanism taken separate from the disclosure of the '505 patent. The trial court found that evidence insufficient to prove undue experimentation. Hence, this court holds that substantial evidence supports the verdict of the jury that claim 24 was not invalid for lack of enablement.

## C.

Anticipation under 35 U.S.C. § 102 requires that a single prior art reference disclose each and every limitation of the claimed invention. *Electro Med. Sys. S.A. v. Cooper Life Sci.*, 34 F.3d 1048, 1052, 32 USPQ2d 1017, 1019 (Fed. Cir. 1994). This court reviews a jury's conclusions on anticipation for substantial errors. *Advanced Display Sys.*, 212 F.3d at 1281.

FFS argues that claim 24 of the '505 patent is anticipated by its own Moba prior art machines, such as the Types A-9 or Type 68 machines that provided the basis for the Omnia

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this court's predecessor inaugurated use of § 112 to prevent the addition of new matter to claims. *In re Ruchtig*, 379 F.2d 990, 154 USPQ 118 (CCPA 1967). As this court's predecessor noted, "[t]he function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him." *In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). Although the statute proscribes addition of new matter to a specification or claims under § 132, the United States Court of Customs and Patent Appeals decided to police the addition of new matter to claims prospectively using § 112. *In re Kammann*, 650 F.2d 1212, 1214, 211 USPQ 323, 325-26 (CCPA 1981). This court's predecessor explained that the use of § 132 or § 112 was synonymous because "a rejection of an amended claim under § 132 is equivalent to a rejection under § 112, first paragraph." *Id.* Since then, this court has continued to use § 112 to ensure that a patentee had possession at the time of filing of subject matter subsequently claimed. In this court's most recent application of the written description doctrine, it noted: "The purpose of the written description requirement is to prevent an applicant from later asserting that he invented that which he did not; the applicant for a patent is therefore required 'to recount his invention in such detail that his future claims can be determined to be encompassed within his original, creation.'" *In re Angen Inc. v. Hoechst Marion Roussel Inc.*, 314 F.3d 1313, 1330, 65 USPQ2d 1385, 1397 (Fed. Cir. 2003) (quoting *In re Chao Inc. v. Mehlert*, 935 F.2d 1553, 1561, 19 USPQ2d 1111, 1115 (Fed. Cir. 1991)). In that setting, the written description is the metric against which a subsequently added claim is measured to determine if it is due the priority date of the original patent. *Id.* at 1560 ("The question raised by these situations is most often phrased as whether the application provides 'adequate support' for the claim(s) at issue; it has also been analyzed in terms of 'new matter' under 35 U.S.C. § 132."); *In re Wright*, 866 F.2d 422, 424, 9 USPQ2d 1649, 1651 (Fed. Cir. 1989) ("When the scope of a claim has been changed by amendment in such a way as to justify an assertion that it is directed to a different invention than was the original claim, it is proper to inquire whether the newly claimed subject matter was described in the patent application when filed as the invention of the applicant. That is the essence of the so-

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stantial record evidence. Therefore, the trial court correctly determined that claim 24 is not invalid for lack of an adequate written description.

B.

The patent specification must disclose information sufficient to enable those skilled in the art to make and use the claimed invention. 35 U.S.C. § 112 ¶ 1. That some experimentation is required to practice the claimed invention is permissible, so long as it is not undue. *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 408, 413 (Fed. Cir. 1984). Embodiment under 35 U.S.C. § 112, ¶ 1, is a question of law that this court reviews *de novo*. *Molecular Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1264, 229 USPQ 805, 810 (Fed. Cir. 1986). This court reviews a jury's underlying factual determinations related to enablement for substantial evidence. *Mitsubishi Elec. Corp. v. Ampex Corp.*, 190 F.3d 1300, 1309, 51 USPQ2d 1910, 1916 (Fed. Cir. 1999).

(b) FPS contends that the specification does not enable one of ordinary skill in the art to lift eggs from a moving conveyor belt without undue experimentation. Nevertheless, FPS presented no record evidence concerning the amount of experimentation one of skill in the art would require to develop the conveyor lifting system of the Moba Omnia in view of the '505 patent disclosure. Rather, FPS asked the jury and asks this court to draw the inferences of undue experimentation based on limited general testimony of the development of that conveyor lifting mechanism taken separate from the disclosure of the '505 patent. The trial court found that evidence insufficient to prove undue experimentation. Hence, this court holds that substantial evidence supports the verdict of the jury that claim 24 was not invalid for lack of enablement.

C.

Anticipation under 35 U.S.C. § 102 requires that a single prior art reference disclose each and every limitation of the claimed invention. *Electro Med. Sys. SA v. Cooper Life Sci.*, 34 F.3d 1048, 1052, 32 USPQ2d 1017, 1019 (Fed. Cir. 1994). This court reviews a jury's conclusions on anticipation for substantial evidence. *Advanced Display Sys.*, 213 F.3d at 1281.

FPS argues that claim 24 of the '505 patent is anticipated by its own Moba prior art machines, such as the Types 4-9 or Type 68 machines that provided the basis for the Omnia

tional descriptions of genetic material necessarily fail as a matter of law to meet the written description requirement; rather, the requirement may be satisfied if in the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure.

*Angen*, 314 F.3d at 1332.

[5] The test for compliance with § 112 has always required sufficient information in the original disclosure to show that the inventor possessed the invention at the time of the original filing. *See Van-Cauh*, 933 F.2d at 1561 ("Adequate description of the invention guards against the inventor's overreaching by insisting that he recount his invention in such detail that his future claims can be determined to be encompassed within his original creation"). The possession test requires assessment from the viewpoint of one of skill in the art. *Id.* at 1563-64 ("the applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention") (emphasis in original); *Union Oil Co. of Cal. v. Atlantic Richfield Co.*, 208 F.3d 983, 997, 54 USPQ2d 1227, 1232 (Fed. Cir. 2000) ("The written description requirement does not require the applicant to describe easily the subject matter claimed, [instead] the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed") (citation omitted). In *Exo* and *Angen*, the record showed that the specification that taught one of skill in the art to make and use an invention also convinced that artisan that the inventor possessed the invention. Similarly in this case, the Lilly disclosure rule does not require a particular form of disclosure because one of skill could determine from the specification that the inventor possessed the invention at the time of filing.

Accordingly, substantial evidence supports the jury's finding that the '505 patent is not invalid for lack of an adequate written description. The '505 patent specification describes every element of claim 24 in sufficient detail so that one of ordinary skill in the art would recognize that the inventor possessed the invention at the time of filing. FPS's contention that the '505 patent does not adequately disclose lifting eggs from a moving conveyor merely revives its non-infringement argument in the cloak of a validity challenge. As noted, the jury found that one of skill in the art would discern possession of the invention at the time of filing, a finding supported by sub-

called 'description requirement' of § 112, first paragraph." In *Genery Gallery*, the patentees described in the specification a recliner sofa with a center console including recliner controls. The specification as filed clearly identified the console as the only possible location for the controls. From the specification, it was clear that the patentees considered placement of the controls in the center console "to be an essential element of the invention." *Genery Gallery*, 134 F.3d at 1479. Hence, this court limited the scope of the patentees' claims to a sofa with controls located in a center console: "Accordingly, [the patentees'] original disclosure serves to limit the permissible breadth of his later-drafted claims." *Id.* at 147 (emphasis added). Thus, because *Genery Gallery* applied § 112, ¶ 1, to hold the patentee to the scope of its original filing, it does not apply in this case where FPS made no allegation at all that the disclosure of the '505 patent did not show possession of a later-filed claim.

The second application of the written description requirement is reflected in *Regenz of the University of California v. Eli Lilly & Co.*, 119 F.3d 1159, 43 USPQ2d 1398 (Fed. Cir. 1997). There, this court invoked the written description requirement in a case without priority issues. Invoking § 112, Lilly required a precise definition of a DNA sequence in the patent specification. In more recent cases, however, this court has distinguished *Lilly*. For instance, in *Exo Biochem, Inc. v. GenProbe, Inc.*, 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002), neither the specification nor the deposited biological material recited the precise "structure, formula, chemical name, or physical properties" required by *Lilly*, *id.* at 1324 (quoting *Lilly*, 119 F.3d at 1566). Although this court initially determined that the specification in *Exo* did not satisfy the *Lilly* disclosure rule, it revisited the issue and remanded to the district court. The court instructed:

On remand the court should determine whether a person of skill in the art would glean from the written description, including information obtainable from the deposition of the claimed sequences, subsequences, mutated variants and mixtures sufficient to demonstrate possession of the genetic scope of the claims.

*Exo*, 296 F.3d at 1324. Similarly, in this court's most recent pronouncement, it noted: More recently, in *Exo Biochem*, we clarified that *Eli Lilly* did not hold that all func-

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lifting mechanism. Nevertheless, as was testified by FFS's own expert witnesses, Dr. Kfir, those prior art Moba machines do not continuously advance eggs through weighing stations while simultaneously weighing the eggs, as is required by claim 24. Hence, this court finds that claim 24 is not anticipated as a matter of law by the asserted Moba prior art machines.

In sum, because substantial evidence supports the jury verdict that claim 24 of the '505 patent is not invalid, this court affirms that portion of the district court judgment.

#### CONCLUSION

The district court correctly determined that substantial evidence supports the jury verdict that FFS does not infringe claim 28 of the 494 patent. This court affirms, therefore, the district court's denial of Diamond's JMOL motion on that issue. Because FFS does not infringe the 494 patent, this court makes no determination as to that patent's validity. On claim 24 of the '505 patent, this court remands for further determination of whether FFS induced its customers to infringe under a correct reading of that claim. This court reverses, therefore, the district court's denial of JMOL on those issues and remands. Because substantial evidence supports the validity of propounded claim 24, this court affirms that portion of the district court's judgment.

#### COSTS

Each party shall bear its own costs.

#### AFFIRMED-IN-PART, REVERSED-IN-PART, and REMANDED

Rader, J., concurring.

This case reveals a distinct institutional difference between the United States Court of Appeals for the Federal Circuit and the other twelve circuits. Whenever a Federal Circuit panel makes an error interpreting the patent code, every other Federal Circuit panel is obliged to follow and perpetuate the error. Even the Supreme Court has difficulty identifying errors for correction because this court's national jurisdiction requires universal application of a mistake. This particular Moba case does not originate, but perpetuates such an error.

This mistake misapplies both the statutory law and the policy underlying United States patent law. Specifically, this court – contrary to the statute and its own thirty-year body of

case law – applies the written description doctrine beyond the purpose for which the doctrine was created, namely priority protection. By making written description a freestanding disclosure doctrine, this court produces numerous unintended and deleterious consequences.

This case illustrates some of the unintended consequences of this judge-made doctrine. Each time a claim encompasses more than the preferred embodiment of the invention described in the specification, a defendant can assert that the patent is invalid for failure to describe the entire invention. Under the expanded written description doctrine, every claim construction argument could conceivably give rise to a validity challenge as well. In this case, for instance, FFS Food Processing Systems, Inc. ("FFS") argues if claim 24 of the '505 patent encompasses lifting eggs from a moving conveyor, as this court has determined, then claim 24 must be invalid because the '505 patent specification discloses no such conveyor mechanism. FFS's routine claim construction argument becomes a validity challenge under the non-statutory doctrine created in the *Lilly* case. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). Fortunately, this court did not fall for FFS's argument.

Unfortunately, however, this court is not the only judicial actor that must deal with the unintended consequences of the *Lilly* doctrine. Because FFS argued that the specification did not disclose some feature of the claimed invention, the trial court had to take extensive testimony and ask a jury to speculate whether the inventor "possessed" the full invention.

The trial court faced even greater confusion because FFS also asserted that the specification does not enable the claimed invention. Thus, the trial court asked this jury to determine whether one of skill in the art would have been able to make and use the invention based on the patent's specification. Then the trial court asked the jury to look at the specification again to determine whether the inventor "possessed" the invention. Thus, this jury faced the cumbersome task of separating two doctrines for sufficiency of disclosure in a patent. Under Federal Circuit case law, FFS asked this jury to decide that the patent's disclosure can enable a skilled artisan to make and practice the entire invention, but still not inform that same artisan that the inventor was

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in possession of the invention. Puzzling. Moreover, the trial court had to give separate instructions and entertain separate witnesses on these inseparable patent rules to ensure full disclosure. The *Lilly* doctrine simply makes no sense in this context. In fact, outside its proper context of policing priority, it never makes sense but compounds the confusion, increases the chances for error, and augments the expense of the trial process.

#### II.

The Patent Act refers to "a written description" in 35 U.S.C. § 112, § 1:

*The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.*

35 U.S.C. § 112, § 1 (2000) (emphasis added). The language of § 112, § 1 indicates that a patent will contain an adequate description if it provides enough information to enable a person skilled in the art to make and use the invention. Any disclosure that enables one to make and use the invention also, by definition, also shows that the inventor was in possession of that full invention. Consequently, the erroneous written description requirement of *Lilly* case lacks both a statutory and a logical foundation.

This origins of the *Lilly* error have been explored at length in *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 63 USPQ2d 1699, 1623 (app.) (Fed. Cir. 2002) (rehearing en banc denied) (Rader, J., dissenting). Before 1967, written description was not a requirement separate from enablement. In *In re Ruchig*, this court's predecessor court created a new written description requirement for the sole purpose of antedating priority issues. See *In re Ruchig*, 379 F.2d 990, 154 USPQ 118 (CCPA 1967). The court in *Ruchig* used § 112, § 1 to reject line-drafted claims that encompassed subject matter not disclosed by the original claims.

Section of title 35, specifically § 112, directly prohibits the addition of new matter to a disclosure, either in the claims or the rest of the patent application. Nonetheless, this court's predecessor decided to use § 112 to prevent the addition of new matter to claims, rather than the specific provisions of

§ 132. This extra license with the language of title 35 did no harm because the Court of Customs and Patent Appeals recognized "that a rejection of an amended claim under § 132 is equivalent to a rejection under § 112, first paragraph." *In re Rasmussen*, 650 F.2d 1212, 1214, 211 USPQ 323, 325 (CCPA 1981).

Thus, from 1967 until 1997, the new matter doctrine, cloaked either in the specific language of § 132 or the innovative new reading of § 112, operated only to determine whether a new claim language deserved priority back to the patent's original filing date. In other words,

(w)hen the scope of a claim has been changed by amendment in such a way as to justify an assertion that it is directed to a different invention than was the original claim, it is proper to inquire whether the newly claimed subject matter was described in the patent application when filed as the invention of the patents. That is the essence of the so-called "description requirement" of § 112, first paragraph.

*In re Wright*, 866 F.2d 422, 424, 9 USPQ2d 1649, 1651 (Fed. Cir. 1989) (emphasis added). The new matter doctrines did not extend beyond priority issues because § 112 already supplied enablement to ensure that an inventor adequately describes the invention in exchange for temporary rights of exclusivity. For over thirty years, this court and its predecessor understood this basic principle of patent law and confined the written description doctrine to its purpose – policing priority of invention.

In 1997, this court inexplicably wrote a new disclosure requirement, found nowhere in title 35, and attributed that new requirement to the written description doctrine. This new disclosure doctrine, applied so far only to biotechnology cases, requires a nucleotide-by-nucleotide recitation of the structure of a biotechnological invention. *Lilly*, 119 F.3d at 1567. Ironically, this court could have reached the same result in *Lilly* without making a new disclosure rule. Under the status's enablement rule, this court would have also determined that the invention was not sufficiently

<sup>1</sup> See generally *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 63 USPQ2d 1699, 1623 (Fed. Cir. 2002) (app.) (comment on basic design) (Rader, J., dissenting) (quoting the very written description cases, except *Lilly*, to show they only employed the doctrine to police priority).

disclosed.<sup>3</sup> Instead, this court presumed to create another doctrine for sufficiency of disclosure. Although characterized as a written description doctrine, the *Lilly* rule cannot in fact trace its origin to the statute or to any prior case. See generally *Exon*, 63 USPQ2d at 1627-29.

Confusing the *Lilly* disclosure doctrine with the traditional written description doctrine, this court has stated that written description is separate from enablement. See *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 65 USPQ2d 1385 (Fed. Cir. 2003). Of course, this proposition is true with respect to the traditional written description/new matter doctrine. On the other hand, the only way to distinguish the *Lilly* rule from enablement is to construe *Lilly* as requiring more disclosure than necessary to enable one of skill in the art to make and use the invention, a "super-enablement" standard.<sup>3</sup> Interpreting *Lilly* in those terms, however, presents serious consequences for biotechnology. For biotechnological inventions, *Lilly* purports to require the recitation, nucleotide by nucleotide, of the entire sequence of a new protein or composition. This non-statutory rule jeopardizes the validity of many inventions in biotechnology pat-

<sup>3</sup> U.S. Patent No. 4,652,325, at issue in *Lilly*, claimed priority to a patent application filed in 1977. The art of biotechnology was in its early stages in 1977. Under a proper enablement analysis, the simple disclosure of human insulin cDNA in the '325 patent would have failed to enable a person skilled in the art in 1977 to practice the claimed invention. Thus, the claims at issue would have been found invalid for lack of enablement.

<sup>4</sup> See Fed. Art. "Intellectual Property Rights in Biotechnology: Addressing New Technology." 34 *Harvard L. Rev.* 827, 834-35 (Feb. 1999). ("The *Lilly* court used the written description test to require that the inventor disclose the entire amino acid sequence of the protein..."). Sampson, *Merck v. The Evolution of the Enablement and Written Description Requirement Under 35 U.S.C. § 112 in the Area of Biotechnology*, 15 *Berkeley Tech. L.J.* 1233, 1262 (Fall 2000) ("The primary argument against the Federal Circuit's heightened written description requirement for biotechnological invention is that... it also 'reduces inventors to invent in innovation by depriving potential patentees of the opportunity to fully benefit from their research.'"); Medelitz, *Justice M.*, "The Evolving Application of the Written Description Requirement to Biotechnological Inventions," 13 *Berkeley Tech. L.J.* 613, 617 (Spring 1998) ("The *Lilly* decision establishes uniquely rigorous rules for the description of biotechnological subject matter that significantly constrain written description disclosure and may, in fact, render the patent law unworkable. The *Lilly* court's (mis)reading of written description is an effective 'super enablement' standard....").

is to show possession, and to show possession is to enable.<sup>4</sup>

IV

In sum, the *Lilly* rule is not just a mere one-time mistake. It defies over thirty years of case law. It finds no specific support in any statutory language. It creates a technology-specific rule in a technology-neutral statute. It distorts the statute's rules for adequate disclosure of inventions. It complicates biotechnology patent drafting to the point of near impossibility and invites invalidating mistakes. It prices non-corporate inventors out of some biotechnological invention markets. Last, but not least, it burdens both trial and appellate courts with unnecessary and confusing procedures in otherwise simple cases like this one.

Of course, this court should recognize and prevent, rather than ignore and create, mistakes in the interpretation of the Patent Act. In the rare event that this court makes this type of error, this Circuit has a unique obligation to swiftly pursue *en banc* correction. Unlike regional circuits, this court cannot rely on circuit splits to identify an issue for Supreme Court correction. Moreover, this court's jurisdiction over patents requires every trial court decision over patents requires every trial court and this court itself to multiply this type of error until corrected. Accordingly, this court has a greater responsibility to pursue *en banc* correction of serious errors in interpretations of the Patent Act, such as the *Lilly* rule.

Alternatively, as indicated in Judge Bryson's concurring opinion, the problem in this area of the law may lie in the line of cases stemming from the *Ruzhky* case. In that context, I agree that all priority issues can be more than adequately resolved under the new matter doctrine in 35 U.S.C. § 132.

Bryson, J., concurring.  
Having been a member of the panel that decided *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997), I write to make a single point with regard to the court's decision in

<sup>4</sup> Patent tribunals have encouraged this court to "revisit the statute of the written description requirement and redraft [it] excepted towards refining the enablement concept, particularly as it concerns claims scope." *Just. Mar. D.*, *Comment: Meeting Courts' Evolving Needs for Written Description Requirements*, 20 *Intellectual Property* 100 (Fall 2000) ("The *Lilly* decision... has been the standard for patent disclosure... [but] in the court's 'bushy' to explore the power of the enablement requirement...").

ented from the advent of the biotech era in the late 1970s. Before judicial creation of the *Lilly* rule in 1997, no inventor could have foreseen that the Federal Circuit would make a super-enablement rule. Without any way to retreat, issued patents to accommodate the new rule, a large number of patents in the field of biotechnology face serious and unavoidable validity challenges.

Even if a drafter of biotechnological patents now knows the new law, compliance may tax a drafter beyond reasonable limits. A new protein or other DNA-related discovery may contain a chain of hundreds of amino acids. Many of the amino acids in the chain have substituents that may take their place without altering the functional properties of the protein. Consequently, a "precise definition" of the new protein, as required by *Lilly*, apparently requires tedious disclosure of thousands of potential permutations of the amino acid sequence that all fall within a proper description of the protein's functions, properties, and DNA source.

This burdensome disclosure standard is tantamount to requiring disclosure, for a new software invention, of the entire source code, symbol by symbol, including all source code permutations that would not alter the function of the software. Ironically, the Federal Circuit has expressly rejected such a requirement for software inventions, but apparently enforced the requirement for biotechnology. See *Ex. N. Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990) (overturning a finding that a patent did not adequately disclose "batching" software). This discrepancy emphasizes another problematic aspect of the *Lilly* doctrine. That is, it imposes a different disclosure standard for biotechnology than for computer technology. Despite the technology-neutral language of the Patent Act, the *Lilly* rule imposes technology-specific requirements.

Returning to the consequences of the *Lilly* rule for biotechnology, the burdens of this elevated "precise definition" standard unnecessarily increase the cost and time required to prepare and prosecute a biotechnology patent. Moreover, university inventors and non-corporate biotechnologists must endure significant expense and delay to acquire the sequence of a potential invention for disclosure under the *Lilly* rule. Sequencing is very ex-

<sup>5</sup> See *Eli Lilly*, 119 F.3d at 1566 (citing the "precise definition" standard of *Fiers v. Revet*, 984 F.2d 1164, 1171 [25 USPQ2d 601] (Fed. Cir. 1993)).

66 USPQ2d 1444 Apex Inc. v. Rarlitan Computer Inc. 1445

(6) Patent construction — Specification and drawings — In general (§ 125.1101)

Patent construction — Claims — Broad or narrow (§ 125.1303)

Claims of patents for computerized switching systems are not limited to sole embodiment disclosed in written description, since record shows that there has been no "admission" by infringing plaintiff that particular embodiment constitutes entire invention, and since written description contains no words or expressions of manifest exclusion or restriction, representing clear disavowal of claim scope.

(4) Patent construction — Claims — Broad or narrow (§ 125.1303)

Patent construction — Claims — Defining terms (§ 125.1305)

Terms "overlay" and "overlaid video signals," as used in claims of patents for computerized switching systems, do not require limitation to display two separate video images at same spot on monitor at same time, since plain language of limitations at issue does not require such display, since definition of "overlay" in context of computing does not require simultaneous display of two separate images, since written description supports this ordinary meaning by providing numerous methods for displaying "overlaid" images in accordance with invention, and since prosecution history, in form of preliminary amendment to grandparent application, does not limit ordinary meaning of "overlay" or "overlaid."

(5) Patent construction — Claims — Broad or narrow (§ 125.1303)

Patent construction — Claims — Defining terms (§ 125.1305)

Term "switch," as used in claims of patents for computerized switching systems, is not limited to device that opens or closes circuit to form direct path between inputs and outputs, since in art of computer networking, ordinary meaning of "switch" is "a device capable of forwarding packets directly to the ports associated with particular network addresses," since written description does not limit "switch" to device that opens or closes circuit to form direct path, and since nothing in prosecution history suggests that direct path is required.

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of cases is based on a fundamentally flawed construction of 35 U.S.C. § 112, paragraph 1.

Apex Inc. v. Rarlitan Computer Inc.  
U.S. Court of Appeals  
Federal Circuit  
No. 02-1303  
Decided April 2, 2003

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(1) Patent construction — Claims — Means (§ 125.1307)

Federal district court, in concluding that "circuit" limitation in claims for computerized switching systems are means-plus-function limitations, erred by relying on single word "circuit" rather than examining limitations as whole, since limitations do not use word "means," and this invokes rebuttable presumption that 35 U.S.C. § 112, sixth paragraph, does not apply, since ordinary meaning of "circuit" in context of computing denotes some structure to person of ordinary skill in art, since nothing in specification or prosecution history indicates that ordinary meaning does not apply, and since every use of term in asserted claims includes additional disjunctive qualification, such as "interface," "programming," or "logic," that further identifies sufficient structure to perform claimed functions.

(2) Patent construction — Claims — Means (§ 125.1307)

"Interface circuit" limitations in claims for computerized switching systems are not means-plus-function limitations, since relevant definition of "interface circuit" in context of computing comprises specific structures, such as line driver and analog-to-digital converters, to person of ordinary skill in art, and since nothing in specification or prosecution history indicates that ordinary meaning of "interface circuit" does not apply to limitations.

(3) Patent construction — Claims — Broad or narrow (§ 125.1303)

Patent construction — Claims — Defining terms (§ 125.1305)

Term "serial data packet," as used in claims of patents for computerized switching

Appeal from the U.S. District Court for the Southern District of New York, Pollack, S.J. Action by Apex, Inc. against Rarlitan Computer Inc. for patent infringement. Plaintiff appeals from final judgment of noninfringement. Vacated and remanded.

James D. Berquist, J. Scott Davidson, and Donald L. Jackson, of Nixon & Vandenhye, Arlington, Va., for plaintiff-appellant.

John F. Ward, John W. Olivo Jr., and David M. Hill, of Ward & Olivo, New York, N.Y., for defendant-appellee.

2. *Verve v. Crane Cam Inc.*, 64 USPQ2d 1051 Fed Cir. 2002), pages 70-72

65 USPQ2d 1051  
Verve LLC v. Crane Cam Inc.

to determine whether inequitable conduct ex-  
ists. First, the party alleging inequitable con-  
duct must make a threshold showing,  
establishing by clear and convincing evidence,  
that the applicant failed to disclose material  
information to the PTO and that the applicant  
intended to mislead or deceive the PTO into  
granting the patent. *ATD Corp. v. Lydall, Inc.*,  
159 F.3d at 546. Once that threshold showing  
is established, the court balances the level of  
materiality and intent to determine whether in-  
equitable conduct before the PTO has indeed  
occurred. *Id.*, citing *Kingsdown Medical Con-*  
*sumables, Ltd. v. Hollister, Inc.*, 863 F.2d 867,  
872, 9 USPQ2d 1384, 1389 (Fed. Cir.  
1988).

(2) Regarding the above circumstances  
(apart from the Gross & Zidulka references)  
that Defendant has alleged resulted in Plain-  
tiff's inequitable conduct, Defendant has not  
made even the barest threshold showing of  
materiality. Defendant merely has asserted the  
existence of these circumstances, without pro-  
viding any evidentiary support as to their ma-  
teriality or relevance. Unsupported assertions  
that a fact is material do not make it so. Be-  
cause Defendant has not met the materiality  
threshold, the Court need not go any further in  
its analysis. Plaintiffs motion for partial sum-  
mary judgment is granted and Defendant's af-  
firmative defense of inequitable conduct is  
eliminated.

For the reasons stated, IT IS HEREBY OR-  
DERED:

Plaintiffs Motion for Partial Summary  
Judgment (Doc. No. 731) is GRANTED.

Verve LLC v. Crane Cam Inc.

U.S. Court of Appeals  
Federal Circuit

No. 01-1417

Decided November 14, 2002

PATENTS

(1) Patentability/Validity — Specification  
— Claim adequacy (9:115.1109)

Patent construction — Claims — Debi-  
ling terms (9:125.1305)

Resolution of any ambiguity arising from  
claims and specification may be aided by ex-

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required to be resubmitted in a divisional  
patent application when those same references  
were cited or submitted in the parent applica-  
tion. *ATD Corp. v. Lydall, Inc.*, 159 F.3d at 547.  
The court based its decision upon  
MPEP § 609, which, at the time of Plain-  
tiff's application for the '662 patent, stated as  
follows:

the patent examiner will consider informa-  
tion cited or submitted to the Office in a  
parent application when examining a con-  
tinuing application, and a list of the infor-  
mation need not be submitted in the con-  
tinuing application unless applicant desires  
the information to be printed in the patent.  
MPEP § 609 (Rev. 3, July 1997). The court  
specifically held, "[i]n view of § 609, it can  
not be inequitable conduct for an applicant not  
to resubmit, in the divisional application, the  
information that was cited or submitted in the  
parent application." *ATD Corp. v. Lydall, Inc.*,  
159 F.3d at 547.

(1) While the issue ATD concerned a divi-  
sional application rather than a continuation  
application, it is clear to this Court that the  
MPEP rule cited in ATD is directly on point.  
The Gross and Zidulka references were cited  
in the '797 Patent application, the parent ap-  
plication to the continuation '662 Patent. Thus,  
based upon the MPEP rule and the holding  
articulated by the court in ATD, the Court  
finds that there is no basis for inequitable con-  
duct in Plaintiff's failure to cite the Gross and  
Zidulka references in the '662 Patent.

3. Other Alleged Inequitable Conduct

Inequitable conduct by a patent applicant  
before the PTO may render a patent unen-  
forceable for the life of the patent. *Kingsdown  
Medical Consumables, Ltd. v. Hollister, Inc.*,  
863 F.2d 867 (9 USPQ2d 1384) (Fed. Cir.  
1988) (en banc), cert. denied, 490 U.S. 1067  
(1989). The Federal Circuit has set out a test

While the parties have not briefed the issue, slight  
changes have been made to the language of MPEP  
§ 609 since the version that was cited in ATD. See, e.g.,  
MPEP § 609, Sub. E, Sec. 1 (September 1995);  
MPEP § 609, English Ed. (August 2001). However, it  
appears to the Court that the various historical versions  
of the MPEP are fundamentally consistent with the  
version cited in ATD. Thus, even if the language of  
§ 609 at the time Plaintiff applied for the '662 Patent  
differed slightly from the version of § 609 cited in ATD,  
the same principles apply.

1050 Advanced Respiratory Inc. v. Electromed Inc. 65 USPQ2d

Based upon these circumstances, Defendant  
asserts that Plaintiff's Motion for Partial Sum-  
mary Judgment to eliminate Defendant's inequitable  
conduct defense is inappropriate.

2. Other Allegations of Inequitable Con-  
duct

In its Response to Plaintiff's Motion for  
Partial Summary Judgment, Defendant cites  
several other circumstances that Defendant al-  
leges evidence Plaintiff's inequitable conduct  
before the PTO. Specifically, Defendant points  
to the following circumstances:

a. Defendant alleges that the Fish & Rich-  
ardson opinion includes prior art relevant  
to the '662 and '263 Patents and that such  
prior art was not made of record in the  
'797 patent application.

b. Defendant alleges that Plaintiff did not  
include other prior art in the '662 or '797  
Patent applications for consideration by  
the PTO. This prior art allegedly includes  
publications regarding high frequency  
chest compression studies and devices, a  
reference to Canadian Patent No.  
1,225,889, prior art brochures, and se-  
lected readings.

c. Defendant alleges that Plaintiff failed to  
disclose several claims that were rejected  
in the '797 Patent application as unpat-  
entable.

d. Defendant alleges that new matter was  
added to the '662 Patent application. Spe-  
cifically, Defendant alleges that Plaintiff  
modified Claim 1 of the '662 Patent ap-  
plication to delete the word "positive" and  
add the word "conjuguous" to distin-  
guish the air flow generator of the '662  
Patent application from the air flow gen-  
erator in the '263 Patent.

e. Defendant alleges that Plaintiff did not  
disclose to the PTO the structure, opera-  
tion, and primed materials related to  
Plaintiff's Model 102 respiratory vest  
systems, such systems which were in use  
one year prior to the filing of the '797  
Patent application.

f. Defendant alleges that Plaintiff did not  
disclose to the PTO that Plaintiff's Model  
103 respiratory vest systems were in pub-  
lic use more than one year before the fil-  
ing of the '797 Patent application.

Discussion

1. Standard of Review

Summary judgment is proper if there are no  
disputed issues of material fact and the mov-  
ing party is entitled to judgment as a matter of  
law. Fed. R. Civ. P. 56(c). The court must  
view the evidence and the inferences which  
may be reasonably drawn from the evidence  
in the light most favorable to the nonmoving  
party. *Enterprise Bank v. Morgan Bank of Vir-*  
*ginia*, 92 F.3d 743, 747 (8th Cir. 1996). How-  
ever, as the Supreme Court has stated,  
"[s]ummary judgment procedure is properly  
regarded not as a disfavored procedural short-  
cut, but rather as an integral part of the Fed-  
eral Rules as a whole, which are designed to  
secure the just, speedy, and inexpensive deter-  
mination of every action." Fed. R. Civ. P. 1;  
*Celotex Corp. v. Catrett*, 477 U.S. 317, 327  
(1986).

The moving party bears the burden of  
showing that there is no genuine issue of ma-  
terial fact and that it is entitled to judgment as  
a matter of law. *Enterprise Bank*, 92 F.3d at  
747. The nonmoving party must demonstrate  
the existence of specific facts in the record  
which create a genuine issue for trial. *Krenik  
v. County of LeSueur*, 47 F.3d 953, 957 (8th  
Cir. 1995). A party opposing a properly sup-  
ported motion for summary judgment may not  
rest upon mere allegations or denials, but must  
set forth specific facts showing that there is a  
genuine issue for trial. *Anderson v. Liberty  
Lobby, Inc.*, 477 U.S. 242, 256 (1986); *Krenik*,  
47 F.3d at 957.

2. The Gross and Zidulka References

The primary focus of Plaintiff's motion for  
partial summary judgment is disputing Defen-  
dant's claim that the Gross and Zidulka refer-  
ences were improperly excluded from the '662  
Patent application. Plaintiff argues that the  
Federal Circuit's decision in *ATD Corp. v. Ly-*  
*dall, Inc.*, is dispositive of this issue. The  
Court finds Plaintiff's arguments persuasive.

In ATD, the Federal Circuit Court of Ap-  
peals held that prior art references were not

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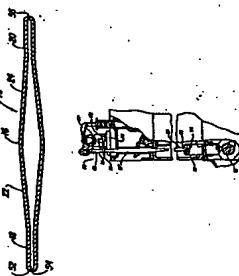
Verve LLC v. Crane Cam Inc.

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and said tube having substantially constant wall thickness throughout the length of the tube and the tips thereof.

The district court granted summary judgment of invalidity on two grounds: that the claims are indefinite, and that the claimed invention is anticipated.

The '315 patent claims a hollow push rod whose overall diameter is larger at the middle than at the ends and that has substantially constant wall thickness throughout the rod, and rounded seats at the tips. This novel shape is said to provide the advantages of increased strength and stiffness, permitting higher engine speeds and greater valve train forces. The '315 patent illustrates the invention as follows:



In this case, judging by the intrinsic record, the meaning of "substantially" constant wall thickness is unclear. While not the basis of this court's decision, the ambiguity of this term was demonstrated at the motion hearing by the plaintiff's willingness to include great variations in wall thickness within the parameters of "substantially" constant wall thickness in a manner that renders them without meaning.

The court further explained that the word "substantially" was at issue because the parties disputed the scope of "substantially" constant wall thickness, and that liability for infringement depends on whether "substantially" embraces the accused push rod. The court recognized that the usage "substantially" may be adequately definite in some cases, but ruled that in this case it was indefinite because it was not further defined. The court cited *Angen, Inc. v. Chugai Pharmaceutical Co.*, 977 F.2d 1200, 1218, 18 USPQ2d 1016, 1031 (Fed. Cir. 1991), for its statement that "When the meaning of claims is in doubt, especially when, as is the case here, there is close prior art, they are properly declared invalid."

[1] We conclude that the court erred in law, in requiring that the intrinsic evidence of the specification and prosecution history is the sole source of meaning of words that are used in a technological context. While reference to intrinsic evidence is primary in interpreting claims, the criterion is the meaning of words as they would be understood by persons in the field of the invention. Patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily under-

stood by those skilled in the art, and to lighten their weight, hollow push rods were developed. However, there was a need for stronger and stiffer rods that could be manufactured from a single piece of metal without the need for inserts or other supporting structure.

The '315 patent claims a hollow push rod whose overall diameter is larger at the middle than at the ends and that has substantially constant wall thickness throughout the rod, and rounded seats at the tips. This novel shape is said to provide the advantages of increased strength and stiffness, permitting higher engine speeds and greater valve train forces. The '315 patent illustrates the invention as follows:

As seen in the drawings and as required by the claims, the push rod 10' is configured whereby the outer diameter of the middle portion is larger than the outer diameter of the end portions 18 and 20. The end portions have a rounded tip 32 forming a seat, that engages a pocket of a cam follower at one end and a pocket of a cam follower at the other end. The shape of the push rod provides increased strength, and because it is hollow it is relatively light. Since the rounded tips are integrally formed, there are no problems with disengagement and the rod is relatively inexpensive to manufacture. Claim 1 is representative:

1. A push rod for an internal combustion engine comprising:  
a single piece of metal in the form of an elongated hollow tube having a middle portion, first and second end portions, and rounded seats at the tips thereof;

said middle portion having a larger outer diameter than the end portions,

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indefiniteness vacated; summary judgment of invalidity for anticipation reversed.

Appeal from the U.S. District Court for the Eastern District of Michigan, Trow, J.; 60 USPQ2d 1219.

Action by Verve LLC against Crane Cam Inc., Crower Cam & Equipment Co. Inc., Trend Products Inc., Competition Cam Inc., and Manton Racing Products for patent infringement. Plaintiff appeals from grant of summary judgment of patent invalidity on grounds of indefiniteness and anticipation. Summary judgment of indefiniteness vacated and remanded; summary judgment of anticipation reversed.

John A. Artz, John S. Artz, and Robert F. Roake, of Artz & Artz, Southfield, Mich., for plaintiff-appellant.

Cedric R. Myers, of Hall, Priddy, Myers & Vande Sande, Potomac, Md.; James E. Wynne, of Buzz Long, Detroit, Mich., for defendants-appellees.

Before Newman, Lourie, and Clevenger, circuit judges.

Newman, J.  
Verve, LLC, appeals the decision of the United States District Court for the Eastern District of Michigan,<sup>1</sup> granting summary judgment that claims 1, 6, and 13 of United States Patent No. 4,850,315 (the '315 patent) are invalid. We reverse the judgment with respect to anticipation, vacate with respect to indefiniteness, and remand for further proceedings.

## BACKGROUND

The '315 patent describes and claims improved push rods for internal combustion engines. Push rods are used to actuate rocker arms which open and close the intake and exhaust valves of cylinders of engines designed for their use. In such engines the push rods ride on cam followers, which are raised and lowered by the camshaft as it rotates. As engine speeds have increased so have the number of piston strokes, requiring a corresponding increase in the number of valve openings and closings; this in turn increases the movement of and forces on the push rods. Stronger

<sup>1</sup> Verve, LLC v. Crane Cam, Inc., 145 F.Supp.2d 862, 60 USPQ2d 1219 (E.D. Mich. 2001).

intrinsic evidence of usage and meaning of term in context of invention, since reference to intrinsic evidence is primary in interpreting claims, but proper criterion for claim construction is meaning of word as they would be understood by persons in field of invention, since patent documents are written for persons familiar with relevant field, and patentee need not include in specification information readily understood by practitioners, and since fact that parties disagree about scope of claim does not of itself render claim invalid.

## (2) Patentability/Validity — Specification — Claims adequacy (§ 115.1109)

Claims for automotive push rod, which require that rod have "substantially constant wall thickness," are not rendered indefinite by use of term "substantially," since terms such as "substantially" are used in patents when warranted by nature of invention, in order to accommodate minor variations that may be appropriate to secure invention, since such use may satisfy duty to "particularly point out and distinctly claim" invention as required by 35 U.S.C. § 112, and may be necessary in order to provide inventor with full benefit of invention, since "substantially" is not indefinite if it serves to reasonably describe subject matter so that its scope would be understood by persons in field of invention, and to distinguish claimed subject matter from prior art, and since understanding of this scope may be derived from extrinsic evidence without rendering claims invalid.

## (3) Patentability/Validity — Anticipation — Identity of elements (§ 115.0704)

Japanese patents for automotive push rods do not anticipate invention of patent in suit, since Japanese patents show push rods that are of uniform diameter along their length, with spherical shaped ends, whereas claims at issue require middle portion of rod to have larger outer diameter than its end portions, and since invention described and claimed in patent in suit does not encompass tube that has uniform diameter along its length, whatever diameter its spherical ends may have.

## Particular patents — General and mechanical — Automotive push rod

4,850,315, Malina, push rod, summary judgment of judgment of invalidity for indefi-



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90), since defense alleges that plaintiffs knowingly, and with intent to deceive, failed to disclose relevant and material prior art to U.S. Patent and Trademark Office, said this discloses nexus or relationship between conduct constituting unclear hands and infringement claim at issue, and since unclear hands is not indistinguishable from defendants' affirmative defense of inequitable conduct, and thus is not redundant.

# PATENTS

(2) Infringement — Defenses — Fraud or unclear hands (§ 120.111)

## JUDICIAL PRACTICE AND PROCEDURE

Procedure — Defenses — In general (§ 410.1801)

Defense of unclear hands is not identical to defense of inequitable conduct, since inequitable conduct is defined as "failure to disclose material information, or submission of false material information, with an intent to deceive," whereas unclear hands is broader defense, encompassing "any willful act concerning the cause of action which rightfully can be said to transgress equitable standards of conduct"; thus, assertion of inequitable conduct defense does not preclude defense of unclear hands, even if both defenses may rest on same facts and result in same outcome.

Action by France Telecom S.A., TeleDiffusion de France S.A., and U.S. Philips Corp. against Novell Inc. for patent infringement. On plaintiffs' motion to strike affirmative defense of unclear hands, and on defendant's motion for leave to amend its answer. Defendant's motion granted; plaintiffs' motion denied.

Steven J. Bulick, of Ashby & Geddes, Wilmington, Del., for plaintiffs.  
Donald J. Parsons Jr., John David Piroo, and Joy Mulholland, of Morris, Nichols, Arshitt & Tunney, Wilmington, for defendant.

## 1. INTRODUCTION

On May 17, 2002, the plaintiffs, France Telecom S.A. ("France Telecom"), TeleDiffusion

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Verve LLC v. Crane Cars Inc.

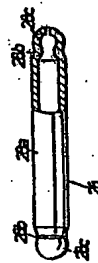
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understood by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field. Thus resolution of any ambiguity arising from the claims and specification may be aided by extrinsic evidence of usage and meaning of a term in the context of the invention. The question is not whether the word "substantially" has a fixed meaning as applied to "constant wall thickness," but how the phrase would be understood by persons experienced in this field of mechanics, upon reading the patent documents. It may of course occur that persons experienced in a technological field will have divergent opinions as to the meaning of a term, particularly as narrow distinctions are drawn by the parties or warranted by the technology. Patent disputes often raise close questions requiring refinement of technical definitions in light of particular facts. The judge will then be obliged to decide between contending positions; a role familiar to judges. But the fact that the parties disagree about claim scope does not of itself render the claim invalid.

## ANTICIPATION

Invalidity based on "anticipation" requires that the invention is not in fact new. *See, e.g., Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 299, 302, 36 USPQ2d 1101, 1103 (Fed. Cir. 1995) ("lack of novelty (often called 'anticipation') requires that the same invention, including each element and limitation of the claims, was known or used by others before it was invented by the patentee"). A single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art. *See, e.g., In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990) ("the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it").

The district court also held on summary judgment that the '315 invention was invalid for anticipation, based on the push rods shown in two Japanese patents designated JP 635 and JP 808. The Japanese patents show push rods that are hollow tubes with spherical shaped ends, as follows:



(3) Verve stresses that the Japanese push rods are not wider at their mid-portion like the '315 rods, but are of uniform diameter along their length. The drawings in the Japanese patents and the '315 patent reflect this distinguishing difference. Although the defendants

France Telecom S.A. v. Novell Inc.

U.S. District Court  
District of Delaware

No. 02-437-QMS  
Decided October 17, 2002

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(1) Infringement — Defenses — Fraud or unclear hands (§ 120.111)

## JUDICIAL PRACTICE AND PROCEDURE

Procedure — Pleadings (§ 410.26)

Pendency/infringement plaintiffs' motion to strike affirmative defense of unclear hands is denied, since defense is stated in "short and plain" manner, and is "simple, concise, and direct," as required by Fed. R. Civ. P. 8, since, to extent defense involves fraud, it satisfies particular requirement of Fed. R. Civ. P.

Appeal Brief  
October 31, 2007  
Application No. 09/844,947

**X. RELATED PROCEEDINGS APPENDIX**

**NONE**